PACKAGE engineering

Shortcuts to permeability testing

Current tests verify the value of conversion factors to estimate permeation rates of products in polyethylene bottles and confirm the utility of a simple formula for calculating these factors. (See page 25)

Want to step up your bottle filling?

With an electronic counting-in, counting-out method (regulating bottle movement) as its heart, a straightline operation automatically fills oblong glass bottles end to end — with no attendant. (See page 28)

Making certain package components fit

Workable steps in starting a quality control program involve (1) setting up procedures for handling samples, and (2) establishing techniques of sample checking — including "go — no go" gauges. (See page 38)

Complete table of contents on Page 2

AUGUST 1958

VOLUME 3 • NUMBER 8

All dressed up for more and better sales.....and Gift-Wrapped by Scandia Machines.
Giving you 20 years' experience in Holiday and Special Events Packaging!

SCANDIA
PACKAGING MACHINERY COMPANY
NORTH ARLINGTON N. J.

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CHARTING NEW PATHWAYS IN PACKAGING

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LOOK at these bundled packages of Electric Auto-Lite original service parts. Snugly sheathed with gleaming VITAFILM, they get quick and certain identification —lasting protection.

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And remember, VITAFILM heat-seals with a positive weld—doesn't rip or split. Adapts readily to automatic high-speed packaging equipment.

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Vitafilm THE FINEST IN **SHEER** PROTECTION

GOODYEAR

Vitafilm, a Polyvinyl chloride—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

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AUGUST 1958 • VOLUME 3 • NUMBER 8

PACKAGE engineering

AN ANGUS J. RAY PUBLICATION

For your calendar

August 11-13. Western Packaging & Materials Handling Exposition, San Francisco Civic Auditorium. Contact: Exposition Office, 759 Monadnock Building, San Francisco 5, California. *Telephone: Douglas 2-7876.*

September 7-20. First Annual Packaging Conference, Industrial Management Center, Lake Placid Club, Essex County, New York. Contact: James R. Bright, Industrial Management Center, 56C Robbins Road, Lexington, Massachusetts.

September 15-17. AMA Clinic on Polyethylene, Hotel Astor, New York City. Contact: E. King Graves, American Management Association, 1515 Broadway, New York 36, New York. *Telephone: Judson 6-8100.*

September 30, Oct. 1-2. Fourth Joint Military-Industry Packaging and Materials Handling Symposium, sponsored by the Department of the Navy in cooperation with other military departments and the Department of Commerce, in Washington, D.C. Contact: Head, Packaging Section, Supply Programs Division, Office of Naval Material, Washington 25, D.C. *Telephone: Liberty 5-6700, Ext. 61061.*

October 13-15. Packaging Institute, 20th Annual Forum, Edgewater Beach Hotel, Chicago, Illinois. Contact: Charles A. Feld, executive director, Packaging Institute, 342 Madison Avenue, New York 17, New York. *Telephone: Murray Hill 7-8875.*

October 14-16. Society of Industrial Packaging and Materials Handling Engineers, 13th National Industrial Packaging and Handling Exposition, and SIPMHE short course, Chicago Coliseum, Chicago, Illinois. Contact: C. J. Carney, managing director, Society of Industrial Packaging and Materials Handling Engineers, Suite 1534, 14 E. Jackson Blvd., Chicago 4, Illinois. *Telephone: Harrison 7-6123.*

October 27-29. AMA Clinic on Packaging For Truck Fleet Operations, Hotel Astor, New York City. Contact: E. King Graves, American Management Association, 1515 Broadway, New York 36, New York. *Telephone: Judson 6-8100.*

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Reader Service Card inside back cover

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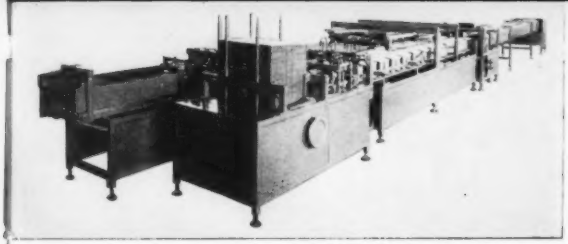
For more information circle No. 203 on Card



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Six 5-qt. cans or gallon cans in 20¼" x 13⅜" x 9¹³⁄₁₆" case and 20¼" x 13¾" x 8¼" case

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Sixty cigarette cartons King Size: 17⅞" x 11½" x 22" Regular: 14¹³⁄₁₆" x 11½" x 22"

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Twenty-four 12 oz. cans in 16⅜" x 10¹⁵⁄₁₆" x 5¹⁵⁄₁₆" case

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Thirty 1 lb. cartons in 16⅛" x 10¹⁵⁄₁₆" x 7¼" case

Twenty-four cartons in 19½" x 10⅞" x 7" case

Forty-eight cartons in 22¾" x 23½" x 15⅞" case

A note from the Publisher

This month, for the first time, there appears on page 12 a new editorial feature, "The Pulse of Packaging."

A good deal of packaging information of a business nature comes to our editor's attention that we feel would be of general interest to our readers but does not fit into our framework of feature articles. Some of this material originates as general publicity, much of it from editorial contacts in the field, while some is information the sales staff picks up.

It seems to me that the man in packaging, or in any dynamic industry for that matter, has a hard time keeping up with the constantly developing and changing field of his choice. There are many magazines being published today. Some are excellent, some are not. Some are so filled with the unimportant that it is extremely time-consuming, if not impossible, to separate the wheat from the chaff — to separate the objective editorial material from the subjective material that rightfully belongs in the advertising pages. In the high speed tempo of today's business you can't waste your time on the irrelevant or unreliable, yet some editorial browsing is helpful.

We believe we will be rendering you a more complete service by supplementing our editorial feature articles, which are designed to inform you regarding specific packaging problems, with this new feature that will provide a broad panorama of what's going on in packaging all over the world and will help you spot trends as they are developing in the field.

We have discussed this new feature for well over a year. We have recognized the desirability of broadening our editorial coverage of the field, but each month the amount of space available for more editorial has been so limited that we just didn't have room for an added feature. However, thanks to the rapid acceptance of PACKAGE ENGINEERING by you, our readers, our list of advertisers has continued to grow until now our advertising volume is catching up to our editorial volume, making it possible to start adding special editorial features.

It is interesting to note that every month since our inception three years ago at least one new supplier has appeared in our advertising pages. In 1958, a year when advertising generally is down, our advertising volume for the first eight months jumped 31 per cent over the comparable period last year.

"The Pulse of Packaging" is a modest one-page feature this month. It is our intention to expand it so that, in effect, it will be a monthly business newsletter on packaging. We will report technical developments, company earnings, plant expansions, and any information our editors feel merits your attention.

We think you will find it interesting and helpful . . . . we will appreciate your comments.

Angus J. Ray
Publisher

PACKAGE engineering®

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Model 20A

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Letters to PACKAGE engineering

Re: Should the "experts" by-pass Purchasing?

Gentlemen:

You have brought up an interesting and controversial subject, and one which probably will touch off a great deal of discussion. This is a subject which has been battled over not only in the packaging field, but in a wide range of products where technical know-how is involved.

We would feel sorry for any concern whose purchasing agent would be in the position of "standing squarely in the middle of the road" blocking the meeting of minds of technical experts of either the buyer or seller. Where this exists in the case of packaging, it probably is carried through to other products as well.

Our solution for this is to have a packaging expert on the staff of the purchasing department who is capable of talking with the technical staff of suppliers in their own terms.

Likewise, our production department has on its staff a man who is his counterpart, so that technical phases of any new development can be translated into terms of our own production facilities. Thus, purchasing's man specializes in the problems of production up to the point of entering our processes, and production's man specializes in the adapting of new materials and processes to our own facilities. Naturally, their abilities must overlap to the point where each has some familiarity with both sides of the problem.

We welcome the experts and would like to see more of them. You also refer to the "ill-equipped non-technical salesmen," of which, unfortunately, there are also a few. We do not expect every salesman to be a technical expert, but we do expect him to be able to dis-

If you package these products — or any other product now being overwrapped in cellophane — read the facts about the new polyethylene overwrap film now made possible by Spencer's special "Poly-Eth" medium-density resin.

Now that Spencer has found the answer to "stiffer" film for high-speed use . . .

Your Product, Too, Can Now Be Overwrapped With Polyethylene

Wouldn't you like to give your product all the advantages of a polyethylene overwrap — for less than you're now paying for cellophane?

Imagine being able to cut your overwrap packaging costs, and get a better package at the same time! This is now possible with polyethylene film made from Spencer Chemical Company's special medium-density polyethylene overwrap resin. One-mil film made of this resin costs about 25% less than cellophane.

Because this film is made of a medium-density resin (.935), it has the stiffness so necessary in high-speed, automatic overwrap packaging. This means you can operate your wrapping machines at your usual high-speed rates.

At the same time this film, made of "Poly-Eth Hi-D" resin number 2504, gives you all the important packaging advantages over both conventional polyethylene and cellophane. Among these advantages are:

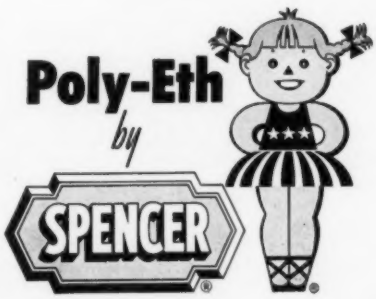
(1) High gloss and clarity. In addition to being glass-clear, this overwrap film has exceptional gloss and sparkle to add selling appeal to your product.

(2) Improved moisture protection. The added moisture vapor proofness of this film keeps your product fresh longer.

(3) Abrasion resistance. Virtually eliminates broken packages and returned merchandise.

(4) Temperature resistance. Withstands temperatures from below zero to 240°F.

Why not give your product these advantages of lower cost combined with greater protection and better appearance? For full information on this new overwrap film contact: Market Development Department, Spencer Chemical Company, Dwight Building, Kansas City 5, Missouri.



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IF you have a packaging problem, see your gummed tape supplier.

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cuss the new technical developments within his industry, from which we can determine whether they have any possible application to our problem.

Likewise, not every buyer of packaging needs to be an expert. The buyer, of necessity, has to be a general practitioner who knows a little about everything. Just as in the medical field, we need good general practitioners, but we also need the specialists. Each has his place and there should be free interchange among them.

Top management has the responsibility here to see that there is no blocking of these lines of communication. By proper management, we think this can be done without disruption of organizational patterns.

N. L. Esthus
Purchasing Agent
Morton Salt Company
Chicago

An intriguing thought: Have packaging experts right in the purchasing department.

Gentlemen:

I think you have posed a very pertinent and important point in this editorial, but I believe we at Avon handle situations of this kind in what we consider to be a very satisfactory manner.

Buyers cannot always be "experts" on each and every one of the many, many items they buy in so far as their adaptation or functioning on our equipment is concerned. They can, of course, evaluate most items satisfactorily and render a correct decision. However, where its use or function is beyond their immediate knowledge, we either submit a sample of the proposed new product or item to a division or person in organization who through that position is able to properly evaluate its importance or application to the function for which it was designed or proposed. If the item is highly technical, a suitable meeting is arranged between the salesman or sales engineer and the people in our organi-

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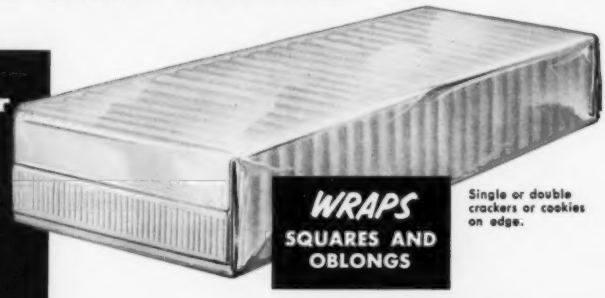

WRAPS SQUARES AND OBLONGS

Single or double crackers or cookies on edge.

WRAPS ROUNDS AND OVALS

Round or oval cookies on edge.

Wraps crackers, cookies, biscuits and other products
on edge, stacked or flat in rows
seals flavor and freshness in!

WRAPS IRREGULAR SHAPES

Biscuits and cookies flat or stacked in rows.

Extra flavor and freshness protection, superior resistance to grease and fats, positive heat sealing, easiest to open and reclose — and *economically low in cost!* All these WAXED PAPER packaging benefits *and more* are yours to profit by with this latest model CAMPBELL Wrapper. For the first time, you can speed-wrap in continuous feed such products as crackers, cookies, biscuits, etc. in neat, eye-appealing arrangements of whole or fractional size *unit packs* — products heretofore difficult to wrap with any degree of production speed. Yes, thanks to the Automatic CAMPBELL Wrapper, a whole new range of package possibilities are yours to exploit. Get the details on this newest of all CAMPBELL wrappers, today!

SAVES YOU MONEY, TOO — Wraps without boards, trays or stiffeners, *unless desired* — Eliminates need for costlier pre-made bags — Requires only one person operation — Prolongs product shelf-life and reduces returns by completely sealing flavor and freshness in. Feeds and deliveries available to meet every production need.

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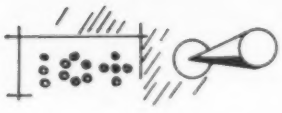

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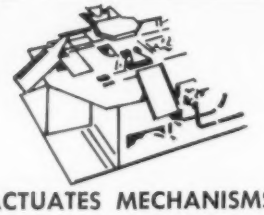

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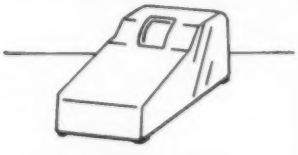

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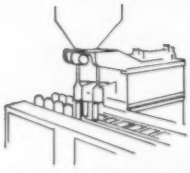

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zation who through their own highly specialized and technical ability can evaluate it for us.

This is more or less standard procedure with us and certainly has definite advantages in that we try to have "expert" talk to "expert" for the ultimate advantage of Avon.

P. R. Livsey
Director of Purchases
Avon Products, Inc.
New York City

Seems like a good way to facilitate the "meeting of the minds" of user-supplier technical experts.

Gentlemen:

Your editorial in the June 1958 issue rang a particularly strong bell with me. Unfortunately, the problem which is posed primarily in the interests of promoting better packaging has equal applications in almost every seller-buyer problem.

You will be interested to know that I am sending copies of your editorial to our own purchasing department and technical department, suggesting that anything they can do to make it easier for our suppliers to tell us what they have seems like good business.

I am also sending copies to every one of our salesmen with the suggestion that the editorial is thought-provoking and that it may give them a little insight regarding some of their selling problems. Since all of our men are "technical" selling—admittedly to different degrees from man to man—they may even succeed in making a few purchasing agents "see the light" to their benefit.

In any event, the editorial is thoughtful and timely under today's conditions.

Morrison M. Bump
President
Union Paste Company
Hyde Park, Mass.

It is easy to forget that "we who buy" also sell — and vice versa up and down the line.

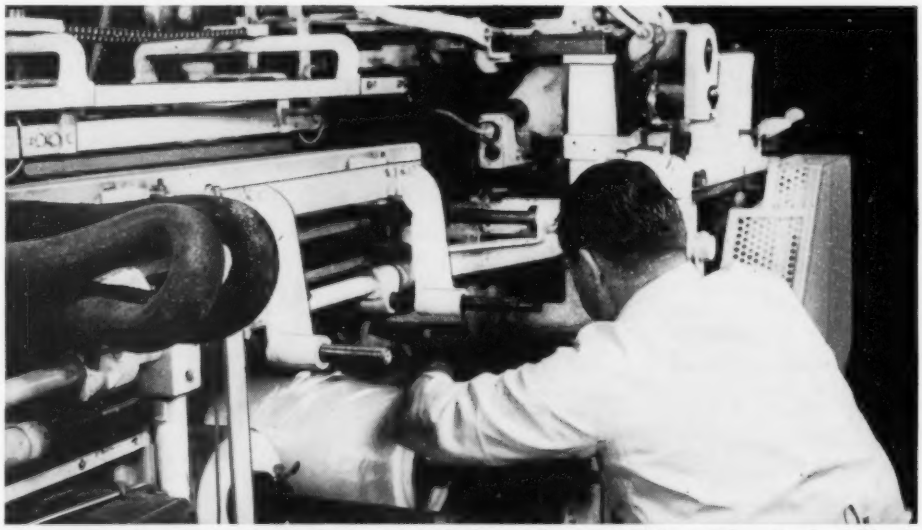
For more information circle No. 209 on Reader Service Card

Packaging is more than "Skin Deep"!

PACKAGING PROBLEM:

Bakers have been tempted by the keeping qualities, durability and low cost of polyethylene film ever since its introduction as a packaging material. But for years the film was too cloudy to compete with transparent bread wrappers already in use, and there was no practical method of using it on standard bread wrapping machines. The polyethylene would not handle properly during the wrapping process. Then, too, the sealing range was so critical that standard equipment would either melt right through the film or else not seal at all. Finally, the film had a tendency to stick and drag on the heating elements as it passed through the machine.

For years, all attempts to solve these problems met with failure.



A Western-Waxide technician installs the first Crown-Seal conversion unit in Fluhrer's Bakery, Eureka, California.

SOLUTION:

Western-Waxide, with forty years service to the baking industry, understood the potential advantages offered to the baker in free-film polyethylene. Our Packaging Research and Development Laboratory launched a concerted effort to make these advantages available to the industry.

It was decided that the problem must be attacked in three phases: (1) Develop a conversion unit for standard wrapping machines to bring the temperature under control and keep the polyethylene from sticking and dragging during the wrapping process and to ensure proper folding. (2) Formulate a polyethylene film with the required transparency, high gloss and machineability. (3) Develop end labels and outsert bands to work under the specific temperature ranges with polyethylene and form a good seal with the new material.

Prolonged experimentation and engineering led to the development of a low-cost conversion unit for A.M.F. standard or super-standard wrapping machines which eliminated the sticking and dragging problem. Temperature-control features were incorporated which resulted in ideal sealing with or without end labels and would operate equally as well with waxed paper, cellophane or polyethylene. Phase one was a success.

The Packaging Research and Development Laboratory, working closely with Spencer Chemical Company in phase two, were rewarded with the development of a specially-formulated higher density polyethylene resin. A unique method of extrusion transformed the new resin into a crystal-clear film with the right balance of stiffness and softness.

Finally, a special coating for outsert bands and end labels was developed for use with the film which ensured a strong, positive seal on the bottom and ends of the package.

The result was Crown-Seal,* the first practical free-film polyethylene package for bread.

Western-Waxide package research and development turns problems *into* profits *for* you! *These services of our packaging research and development laboratories and personnel are available to solve your packaging problems. Write or phone your nearest Western-Waxide office today.*

*Crown-Seal is a trademark of Crown-Zellerbach Corporation

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Manufacturers and converters of plain and printed waxed paper • foil • foil laminates • polyethylene coated paper and polyfilm laminates • films • bags • pouches and other specialized flexible packaging materials

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The pulse of packaging

Packaging notes from abroad: Europe shows growing interest in packaging lines. Out of each eleven employees in a "sweet" products factory, six are occupied in production and five in packaging, **M. Fuchs,** Swiss packaging expert, told a Brussels audience. He said interest in packaging lines is "very alive," and looks to the packaging line as the last point of manufacturing. Germany reports an innovation: Bread baked in an overwrap of "special cellulose film." Once baked, the wrap fits tightly around the bread . . . "Vacuum packaging has a bigger potential than any other method of food prepackaging which has been introduced over the last 20 years," **Stuart Foster,** British vacuum packaging specialist declared. He predicted both refinements in machinery and growth in extension of this packaging . . . The Hungarian Packaging Institute held a six-day packaging course for 200 participants with daily eight-hour educational sessions. Students took final examinations before getting their testimonials . . . **Prof. Dr. R. Heiss,** German Institute head, urges more attention to packaging machinery: "Unfortunately, there is a lack of literature on the stresses to which packaging materials are subjected during the mechanical processing on the machine." He suggests materials meet two requirements: (1) Should process well on the machine, and (2) provide a tight, firm package. He urges closer user-supplier cooperation.

News from around the country: Twenty-four members of the Forest Products Packaging Council held their 13th annual meeting at Madison, Wis., elected **R. A. Hickman,** The Dobeckmun Company, president. New vice president is **Robert S. Kurtenacker,** of the Forest Products Laboratory, and **Kenneth W. Kruger,** chief of FPL packaging research, was re-elected secretary-treasurer. Members of the council worked together during World War II at the FPL, served the military forces, and now as packaging consultants and engineers, they continue to meet each year . . . **Olin Mathieson Chemical Corporation** announces development of Omnikote, an economical white-coated kraft board. Company officials see a bright future for it, pointing out that it is a natural fourdrinier kraft board clay-coated on one side directly on the paper machine, thus having a white, extra-smooth print surface at low cost . . . We hear that a Pittsburgh produce dealer has ordered ten carloads of Maine potatoes delivered in gold aluminum foil bags of 10-lb. capacity. Reports indicate foil bags reduce "greening" of potatoes in stores . . . **National Safe Transit Committee** announces availability of a new imprinted label for its 285-plus certified manufacturers. This supplements the NST red and yellow label and came about in response to requests for an imprinted label meeting the requirements of automation as applied to assembly line operations . . . **Reynolds Metals Company** laminated more than 400 miles of aluminum foil to white paper for use with a full-page margarine advertisement in the Chicago Tribune . . . **Chemical Specialties Manufacturers Association** says the number of aerosol units filled increased 22 per cent last year. Biggest gain: Air sprays, up more than 18 per cent. Aerosol production totaled some 390 million units, according to CSMA . . .

Packaging standardization moves ahead: Paraffined Carton Research Council announces that the U. S. Department of Commerce commodities standards division has "cleared" standardization recommendations for inside dimensions of 1-lb. Elgin-style butter cartons. It is surveying the carton and dairy industries before final acceptances. These inside dimensions are for machine filling, length—4⅞", width—2$^{9}/_{16}$", depth—2$^{9}/_{16}$"; for machine or hand filling, length—4¾", width—2⅝", depth—2⅝"; for hand filling, length—4⅞", width—2⅝", depth—2⅝" . . . **National Wooden Box Association** has issued specification 1-1B, covering nailed wooden and locked corner boxes for industrial use. The eight-page spec includes material, nailing, and engineering data . . . **Fibre Drum Manufacturers Association** reports that supplements have been issued for the Uniform Freight Classification, Consolidated Freight Classification, and Motor Freight Classifications covering fibre drum specifications. These revisions hike maximum weights for dry products, call for use of the Mullen bursting test, with tests to be made from the exterior, after fabrication . . .

What companies are doing: G. Barr & Co., Chicago contract aerosol packager, announces a 25 per cent increase in laboratory space and a technical staff increase from 14 to 19 chemists . . . **Knox Glass Incorporated** recently opened its new mold shop at Reno, Pa., replacing smaller facilities formerly rented at Oil City . . . **St. Regis Paper Company** plans to expand its engineering and machine division facilities at East Providence, R.I., with a 21,000 sq. ft. building addition . . . **American Can Company,** Canco Div., opened a plant in Hammond, Indiana, to process up to 1.2 billion lbs. of plate from coil stock for shipment to container plants in Indiana and Illinois . . . **Morningstar-Paisley, Inc.,** New York adhesives manufacturer, is acquiring **Thurston & Braidich,** importer and processor of water soluble gums . . . **Spencer Chemical Company** has incorporated **Spencer Chemical International, Inc.,** as a wholly-owned subsidiary for conducting its foreign operations and is basing the new organization in Panama City, Panama . . . **West Virginia Pulp and Paper Company** has a new plant in Torrance, Calif., for multiwall and grocery bag manufacturing using its Clupak stretchable paper . . . **Doughboy Industries** has moved its expanded mechanical division into a 47,000 sq. ft. plant at New Richmond, Wis. . . . **Cryovac Company,** div. of W. R. Grace & Co., has a new plant at Toronto . . .

People in packaging: Robert Y. Arnold has become a laboratory technician in package development for American Viscose Corporation's film division . . . new Eastern district sales engineer for Hudson-Sharp Machine Company is **Bart Loskot** . . . Crown Cork & Seal Company, Inc., has named **W. L. Lohrfinck** sales manager for crowns . . . Crown Cork also announces two new district sales managers: **Harvey C. Tull at** Philadelphia and **Hamilton Lowe** at Orlando, Fla. . . . **Donald E. Wright** is now district sales manager of the St. Louis plant of Hinde & Dauch . . . **Earl G. Tempest** is the new manager of the Marienville, Pa., plant of Knox Glass Incorporated . . . Container Corporation of America has named **Henry G. Van der Eb** vice president in charge of marketing for its folding carton division; **Delbert A. Theobald** general manager of its shipping container plant at Fernandina Beach, Fla., and **Edwin H. Bixby** and **James F. McDowell,** general sales managers of the company's shipping container division . . . **William F. May** is now national sales manager, processed foods containers, for American Can Company's Canco Division . . . **Garland W. Reese** has been named a vice president of American Can and assigned to its executive department . . . **Robert B. Thompson** is now vice-president of manufacture of the company's Canco Division . . . **James F. Loyd** heads up Inland Steel Container Company's new Houston sales office . . . Bemis Bro. Bag Co. has named **Alfred J. Grunzinger** production manager of its St. Louis bag factory . . . **Earl J. Rusnak,** veteran Chicago furniture dealer, is now manager of furniture packaging sales for Stone Container Corporation's Chicago corrugated division . . . Package Machinery Company announces that **Harold Mosedale, Jr.,** is now vice president in charge of sales and **Edward W. Forth** is vice president in charge of engineering . . . **James O. Alexander** has joined Reynolds Metals Company as assistant manager of the baking and milling market for its packaging division . . . general manager of Reynolds' new plastic sales division is **W. J. Vogel** . . . **P. D. Dilliard** is now in charge of Anchor-Hocking Glass Corporation's chemical research and development laboratory.

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Containers and wrappers come away easily and cleanly, even from sticky asphalt.

Nothing Sticks to Paper

COATED WITH A SYL-OFF COATING†

If you store, handle or package sticky products, you and your customer can speed up production and processing, keep quality high, and save on shipping costs too, — by specifying paper coated with one of the new Syl-off* silicone paper coatings developed by Dow Corning.

Paper and paperboard, from glassine to boxboard, coated with Syl-off, have excellent anti-adhesive characteristics. Even the gummiest of materials . . . adhesives, asphalt, candy, glue, unvulcanized rubber . . . are easily, quickly, and cleanly removed from wrappers or interleaving sheets coated with Syl-off.

Applied to paper, a Syl-off coating does not alter the stock, will not migrate or transfer, and will not contaminate packaged products.

Applied one or two sides, depending on the proposed use, Syl-off coatings are effective, permanent, and economical. What's more they're lighter in weight than conventional release coatings, which means additional savings in shipping costs.

Investigate the use of paper coated with Syl-off. Write for free samples, full information and list of suppliers.

†We're sure there must be exceptions, but of the more than 100 materials tested to date, none has been found to stick — except a silicone adhesive.

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first in silicones

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CASE up to 500 packages per minute*

TOP OR END LOADING

with a

SURE-WAY PACKAGE CASER ®

Distributed Exclusively by FMC

*Depending on package size, type loading case, casing pattern.

Many of General Mills famous products are cased by 33 high-speed "Sure-Way" Casers. Typical is this trouble-free installation at their Toledo, Ohio, plant.

CUTS CARTONING COSTS

Now, *with only a moderate capital investment*, you can replace obsolete casing methods with a new "Sure-Way" automatic, high-speed package caser—*and save up to 70 and 80% in man-hours alone!*

This is the most economical and versatile package caser on the market today. With low-cost change parts and accessories, the "Sure-Way" is quickly adapted to virtually any casing application. Regardless of your choice of assembly—right or left hand, or of the three discharge arrangements, you'll find the "Sure-Way" extremely compact, reducing space requirements as much as 80%!

MANY OTHER OUTSTANDING FEATURES

Near-human in gentleness to packages and over-wraps • Complete safety through automatic controls • Loads top, end or side-opening cartons • Low power costs • Virtually no maintenance required!

Write today for Bulletin No. CMD 601-W, or call your nearest FMC representative.

Unmatched for flexibility of case loading patterns, package sizes

There are dozens of patterns and casing combinations that can be handled smoothly and efficiently by the "Sure-Way." Put your problem up to our package engineers for recommendations that can mean big profits through proper package handling! No obligation, of course.

Putting Ideas to Work

fmc FOOD MACHINERY AND CHEMICAL CORPORATION ®

FOOD MACHINERY AND CHEMICAL CORPORATION

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of labels printed in 15 minutes!

"We pack as many as twenty items a day, and every package or label is coded. We had to keep a big inventory of coded cartons and labels. The waste was terrific because of code changes. Now we code all the labels and cartons we need for the day in fifteen minutes—on our Tickometer."

—From an actual case study.

You can eliminate most label and carton waste with a Tickometer. Your printer provides only the basic forms, and you *imprint* as needed for the day's output—type, grade, weight, size, color, flavor, date, etc....at speeds from 400 to 1,000 a minute. Save on printing costs, cut down your inventories of labels, cartons, etc. And you never run short of needed labels!

- The Tickometer also *counts*—gives you an additional check on production and shipments. *It's so accurate, banks use it to count currency!* It can be set for a predetermined count, will record partial or total counts; and can do consecutive numbering.
- The Tickometer prints with exact registration on most all standard papers and light card stock. Feeds and stacks automatically, and can be easily run by anybody, without training.
- It is also used to mark, stamp, endorse, date, cancel and *count* coupons, sales slips, checks, forms, cards, tags, tickets—with big savings in time and effort. It can be bought or rented. Pitney-Bowes service is available from 302 points, coast to coast.

Call the nearest Pitney-Bowes office for a demonstration. Or send the coupon for free illustrated booklet and case studies.

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Made by the originator of the postage meter... offices in 107 cities in U.S. and Canada.

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Send free Tickometer booklet and case studies

*Name*_____

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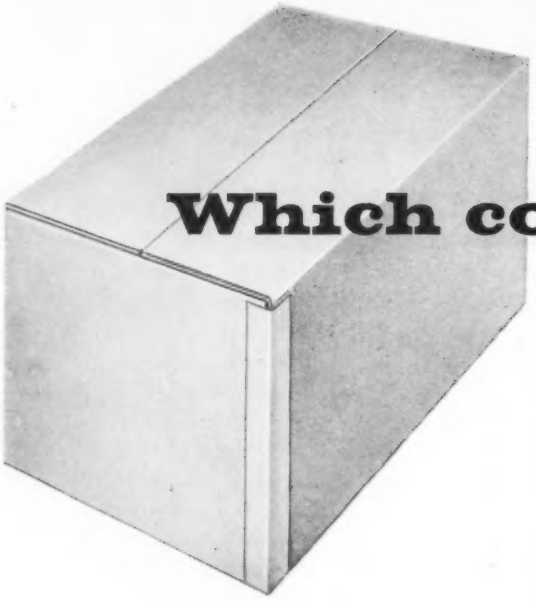
What you should know about "manufacturer's joints" in Union Boxes.



Which corner of a box

One corner is more important than the rest: where your corrugated shipping container is held together. This "hinge", or manufacturer's joint, often holds the key to your box's performance.

As the illustrations show, manufacturer's joints comprise three basic types: taped, stitched, and glued-lap. Each does a special job. Knowing which to use, and when, calls for a detailed analysis of your product and how it will be shipped.

Union Box engineers will be glad to make such a study for you. This is part of Union's complete structural design service. These fundamentals, however, are excellent guides:

Many shippers prefer tape

Taped Joint (outside)

Tape is generally gum-backed, reinforced kraft paper or cloth, having high tear strength, especially in the lengthwise direction. Tapes are 2, 2½ and 3 inches wide and come in varying grades depending on degree of strength required.

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should you examine first?

Advantages: no projections. In stacking, boxes lie flat, rock less. Also, entire interior area of box can be used. The taped joint is continuous, too . . . seals out dust and dirt. And it folds to make a true box corner.

On the other hand, tape is frequently more expensive than other manufacturer's joints. It can be adversely affected by moisture also. In some cases, tape may interfere with printing.

The sturdy stitch

Frequently used for heavy items like canned goods, this joint uses steel staples driven from the outside of the box panel. It is probably the strongest "hinge", gives the most positive closure, and is not affected by moisture or cold. It is usually the least expensive.

Stitched Joint (outside)

The closure, however, is not continuous. And, since the metal stitches may protrude inside the box, this joint is normally not recommended for fragile and prone-to-scratch articles.

The diagonal stitched joint shown is a typical arrangement. Others include vertical, horizontal, and double stitching.

Glued lap . . . the versatile joint

Flap may be adhered either to the inside or outside of the box, and to the end or side panel. Inside-flap gluing is the most popular. It is the only joint which leaves a completely uninterrupted exterior printing surface.

Like the taped joint, the glued lap joint is continuous . . . forms a true fold. Performance under adverse moisture conditions is questionable. Also, inside-lap does not give 100% clear inside-packing area.

Glued Lap Joint (inside)

Take full advantage of Union's accumulated knowledge in constructing and recommending manufacturer's joints for shippers in every industry. Consistently well-engineered features such as these offer the surest protection for your product and your shipping investment.

union camp

Write for Union's free, informative booklet "Manufacturing Corrugated Boxes."

UNION BOXES

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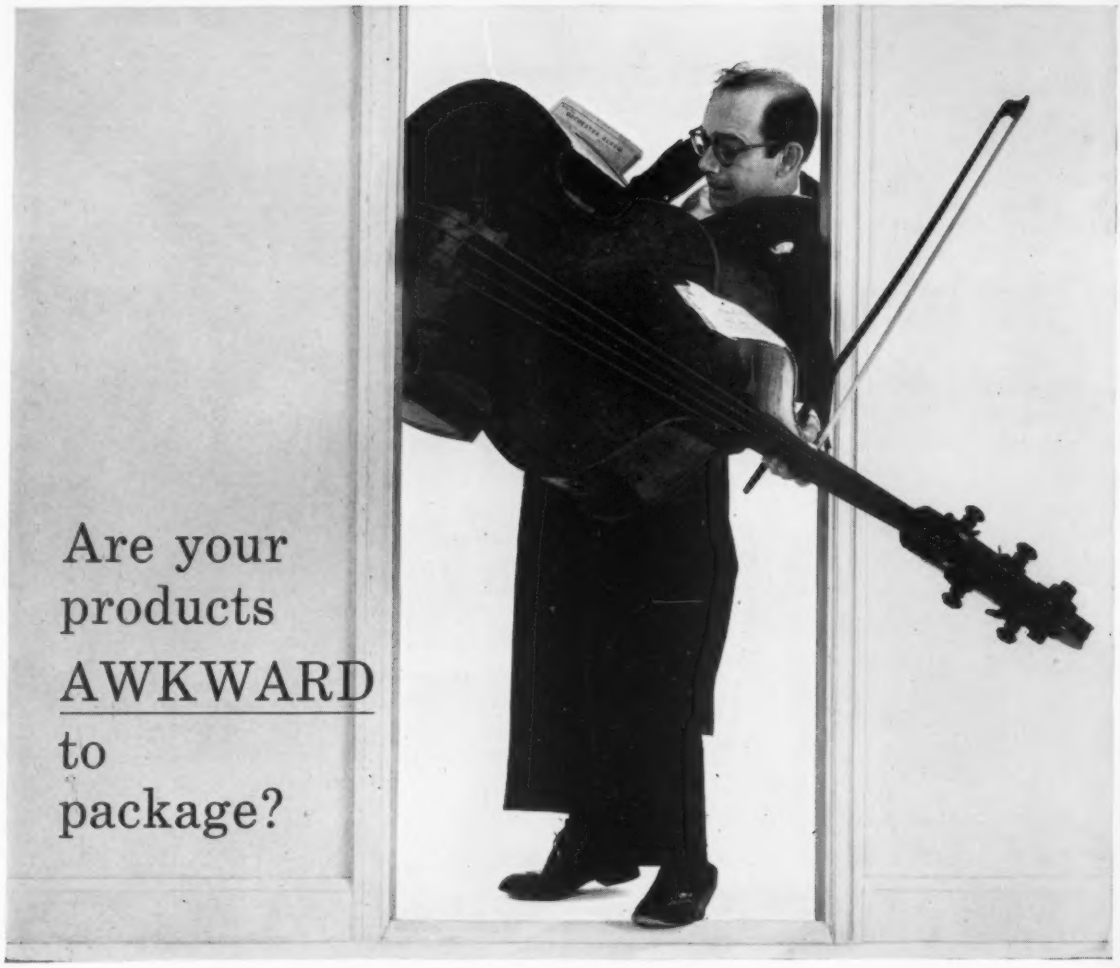
Southern Division—P.O. Box 570, Savannah, Ga.; P.O. Box 454, Lakeland, Fla.
Western Division—4545 W. Palmer, Chicago, Ill.



Are your products AWKWARD to package?

Bemis flexible packaging may solve your problem

WHAT'S MORE AWKWARD than half-empty coffee cups and food trays? If you've wondered what the hostess does with this mess, she puts it in a Bemis paper bag! Proved in government service, the polyethylene-coated paper won't leak for 24 hours. Want a packaging idea that'll hold water? Contact Bemis.

EXPENSIVELY AWKWARD! The big 4′ x 8′ sheets of highly finished plywood *were* a packaging nightmare—before Bemis. Now, light, inexpensive, beautifully printed Bemis PSP bags are effecting savings all along the line—factory, shipping and retailing. Could Bemis *flexibility* effect graceful savings for you?

Where flexible packaging ideas are born

Bemis

Bemis may already be making the better package you need. Write: Paper Specialty Plant, 1058 S. Vandeventer, St. Louis 10.

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Save up to 54%

on your overwrap costs by switching from cellophane to film made of

MARLEX*

This new film made of MARLEX linear polyethylene represents a real breakthrough in transparent overwrap packaging. It is as different from conventional low and medium density polyethylene films as it is superior to cellophane. For detailed information, contact your film supplier or packager, or write to us directly for application data and film samples.

*MARLEX is a trademark for Phillips family of olefin polymers.

- **Sparkling clear, glossy, transparent film with excellent printability!**
- **Boilable . . . freezable! Perfect for frozen food packaging!**
- ***Infinite* shelf life! No humidity or "drying out" problems! Crackproof!**
- **Moistureproof! Two to three times better than cellophane or conventional polyethylene!**
- **Easier to handle, non-blocking, heat-sealable! Economical thin gauges are used in *conventional* overwrap machines!**
- **Offers many times the grease resistance of ordinary polyethylene film!**
- **Five times the tensile strength of low-density polyethylene film!**
- **Ideal overwrap for baked goods, paper products, cereals, textiles, apparel, candy, cigarettes, sterilizable packages, snack foods, poultry and dairy products!**
- **Film made of MARLEX has a "built-in zipper"! No tear tape required! Opens easily with inexpensive die-cut "tear tab"!**

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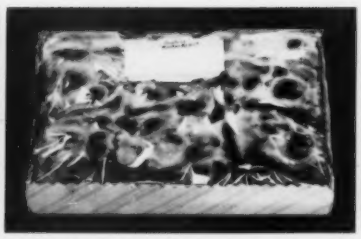
...YOU GET IT WITH

BUCKEYE POTATO CHIPS sell best in greaseproof bags of sparkling AVISCO MS-3 cellophane. Bags are made and printed by the Puritan Packaging Corporation, Columbus, Ohio.



BUETER'S SWEET DOUGHS are machine-wrapped in greaseproof AVISCO MS-1 cellophane because it never clouds on contact with baked goods and seals in freshness and flavor.

PLANTERS PEANUTS package must be greaseproof yet transparent and highly printable. Made of AVISCO MS-4 cellophane for rapid bagging and sealing by Lassiter Corp., N.Y.

CUDAHY BACON package is completely greaseproof. Depends upon easily sealed cellophane overwrap to prevent annoying grease leakage. Yet it may easily be opened and reclosed by the housewife. Made of AVISCO 300 DSB cellophane by Daniels Manufacturing Company, Rhinelander, Wisconsin.

AVISCO® CELLOPHANE

No greasy packages to spoil sales when you use AVISCO cellophane. For cellophane is not only greaseproof, but it heat seals easily and securely to prevent grease leakage. Even more, cellophane never clouds on contact with grease—always remains sparkling clear to create greater appetite appeal and build extra sales. AVISCO cellophane is also low in cost and gives top performance on packaging machines. It's your best choice for packaging foods with a high grease content—or any other foods, for that matter.

AVISCO®

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PACKAGING MATERIAL BY DOBECKMUN PACKAGED BY IVERS-LEE

ALCOA WRAP KEEPS THEM LABORATORY PURE

Here's the most efficient, economical way of protecting extremely sensitive drug and pharmaceutical products. Sealed airtight in Alcoa® Wrap aluminum foil, pharmaceuticals get sterile, nontoxic protection . . . stay full strength on drugstore and supermarket shelves.

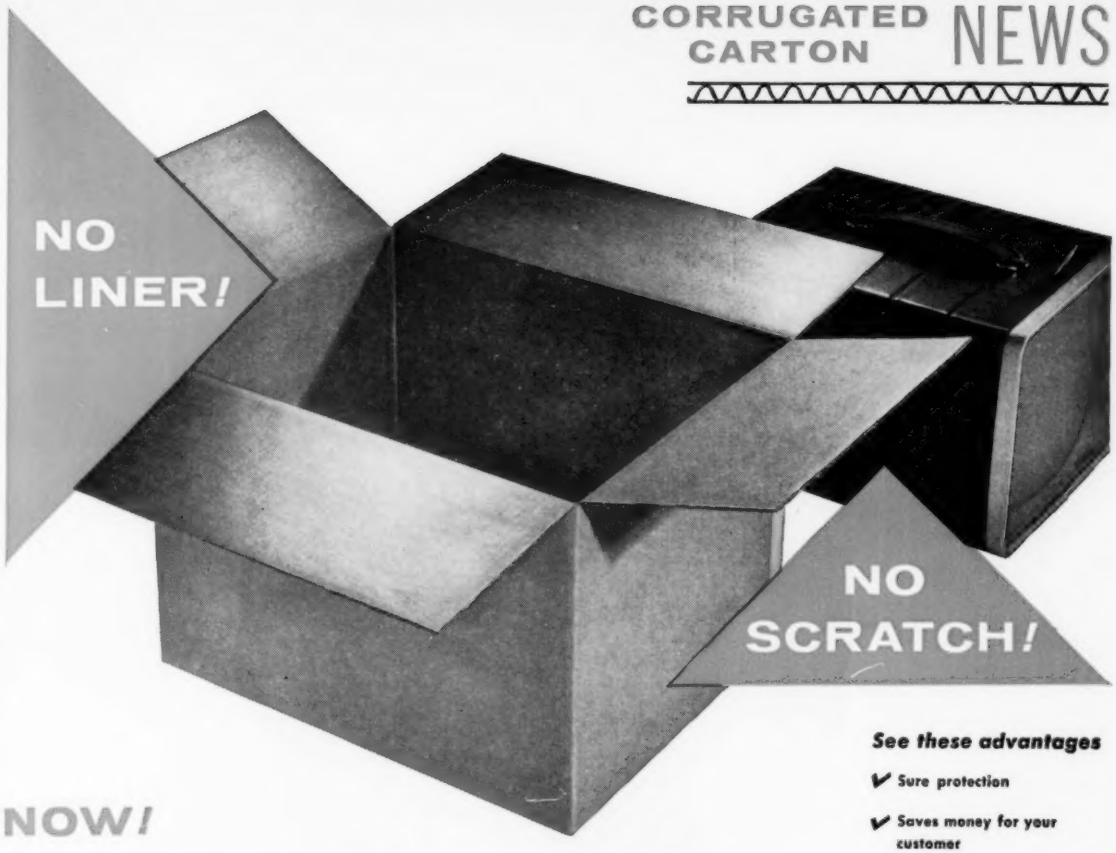
Strong, durable Alcoa Wrap withstands handling by customers . . . it's moistureproof, greaseproof, puncture resistant.

Sell-on-sight appeal of gleaming, colorful Alcoa Wrap captures more sales from competitive brands.

What's your packaging problem? Whether it's guaranteeing dryness, protecting freshness, or getting a powerful sell-on-sight appeal—call your Alcoa salesman. He works with the nation's outstanding converters to fill all your packaging needs, with Alcoa Wrap. For more information, write: Aluminum Company of America, 1650-H Alcoa Building, Pittsburgh 19, Pa.

You're always ahead with Alcoa
. . . greatest name in aluminum

"ALCOA THEATRE"
Exciting Adventure
Alternate Monday Evenings



See these advantages

- ✔ Sure protection
- ✔ Saves money for your customer
- ✔ Applied with standard waxers

NOW!

New A-C Polyethylene Coating ELIMINATES NEED FOR LINERS

...Applies with the ease of wax!

How? The A-C POLYETHYLENE blend is stronger, more durable . . . holds down "scratchy" corrugated fibers—prevents scratching of highly finished appliances, furniture and other merchandise—and it does not rub off or block.

Now . . . you can sell corrugated cartons and spacers that give sure protection to your customer's product without liners! What a sales point!

Simply coat with A-C POLYETHYLENE-and-wax blend, using your *present* waxing equipment.

Result . . . you have a superior, more saleable carton—you save your customers the cost of labor and extra liners! Remember—A-C POLYETHYLENE is applied with your present working equipment—delivers a premium carton. Call or mail coupon today for complete details.

A-C® Polyethylene

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☐ Please have a technical representative call to demonstrate A-C POLYETHYLENE-wax coating.

☐ Please mail me information on coating board with A-C POLYETHYLENE blends.

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These boxes do everything but balk...

H & D corrugated boxes for shipping Sohio wax start through this machine knocked down. They're set up, packed and sealed—automatically. Would precision packaging speed up your operations? Better see H & D.

HINDE & DAUCH

Division of West Virginia Pulp and Paper Company

AUTHORITY ON PACKAGING • SANDUSKY, OHIO
15 FACTORIES • 42 SALES OFFICES

A. R. Nielsen is a graduate of Trinity College (Connecticut) with a B.S. degree. Associated with Plax since 1944, his chief interests have been the study of permeability and development of low-permeability and protective plastic coatings. Mr. Nielsen is a member of American Chemical Society and Society of Plastic Engineers.

E. J. Temple is a graduate of Yale University with a degree in chemical engineering. He served in a variety of positions in the production department of Plax prior to joining its technical sales organization in 1952. He served with the Army Chemical Corps Materiel Command during the Korean incident.

Permeation effects of bottle size and weight

By A. R. Nielsen,
Research Chemist,
and E. J. Temple,
Technical Sales Engineer,
Plax Corporation,
Hartford, Connecticut

Testing permeability of different sized plastic bottles for a specific permeant requires a great deal of time. Use of a conversion factor, calculated mathematically by a simple formula, can save valuable time and expense. This factor is shown to be in good general agreement with actual tests of various sized bottles, set forth by the authors.

To determine the suitability of plastic bottles for the many products which can profit from such a package, a variety of tests has been devised. An essential one, in the selection of the proper bottle, is the bottle permeability test. Much of the basic permeability data published during the past ten years was derived from tests made in the standard 4-fl. oz. Boston Round bottle. These data are usually expressed either as per cent content-weight loss per year for this bottle, or as permeability factors (gm/24 hr/100 sq. in/.001 in. thickness).

In any case, there is always a problem in applying these data to bottles of different sizes and weights. Of course, the best method of checking the permeability of a particular bottle is to set up a full test in that bottle, but this is often impractical. A simple method of calculating the approximate permeability values of certain bottle sizes is offered in a report by Pinsky, Nielsen and Parliman *(1)*. Conversion factors are presented relating the yearly percentage permeability of 1-qt., 1-, 6½-, and 13-gal. polyethylene bottles to that of the 4-fl. oz. Boston Round.

Calculate Conversion Factors

These factors were determined mathematically, based on bottle wall thickness, surface area, and volume. In these cases, the permeability of the 4-fl. oz. Boston Round was selected as a standard of 1. This is stated in a formula

$$C_x = \frac{S_x}{S_4} \times \frac{T_4}{T_x} \times \frac{V_4}{V_x} \quad (1)$$

where C_x is conversion factor, new bottle,
S_x is surface area, new bottle,
S_4 is surface area, 4-fl. oz. bottle,
T_x is average wall thickness, new bottle,
T_4 is average wall thickness, 4-fl. oz. bottle,
V_x is volume, new bottle,
V_4 is volume, 4-fl. oz. bottle.

The conversion factors calculated by this method are applicable to percentage permeability rates. They may be used, for example,

Fig. 1. Display of typical round plastic bottles used for test purposes. The sizes range from ½ fl. oz. to 1 gal. Not shown are the lightweight containers which are included in the test data presented in Tables 1 and 2.

to find the permeability (P) of a 16-fl. oz. Boston Round bottle to a particular chemical or product according to the formula

$$P_{16} = C_{16}P_4$$

where the percentage permeability of the 4-fl. oz. bottle (P_4) is known.

Valuable aids. These conversion factors have proven to be valuable aids in checking the ability to package customer products in large polyethylene bottles. For this reason, it was felt that the volume range covered should be extended to include bottles of lesser capacity. It was decided to develop additional experimental data for comparison with the calculated factors.

Table 1 presents basic data and conversion factors, calculated by Equation 1, for stock round polyethylene bottles of 1/2-fl. oz. to 1-gal. capacity. Also included are

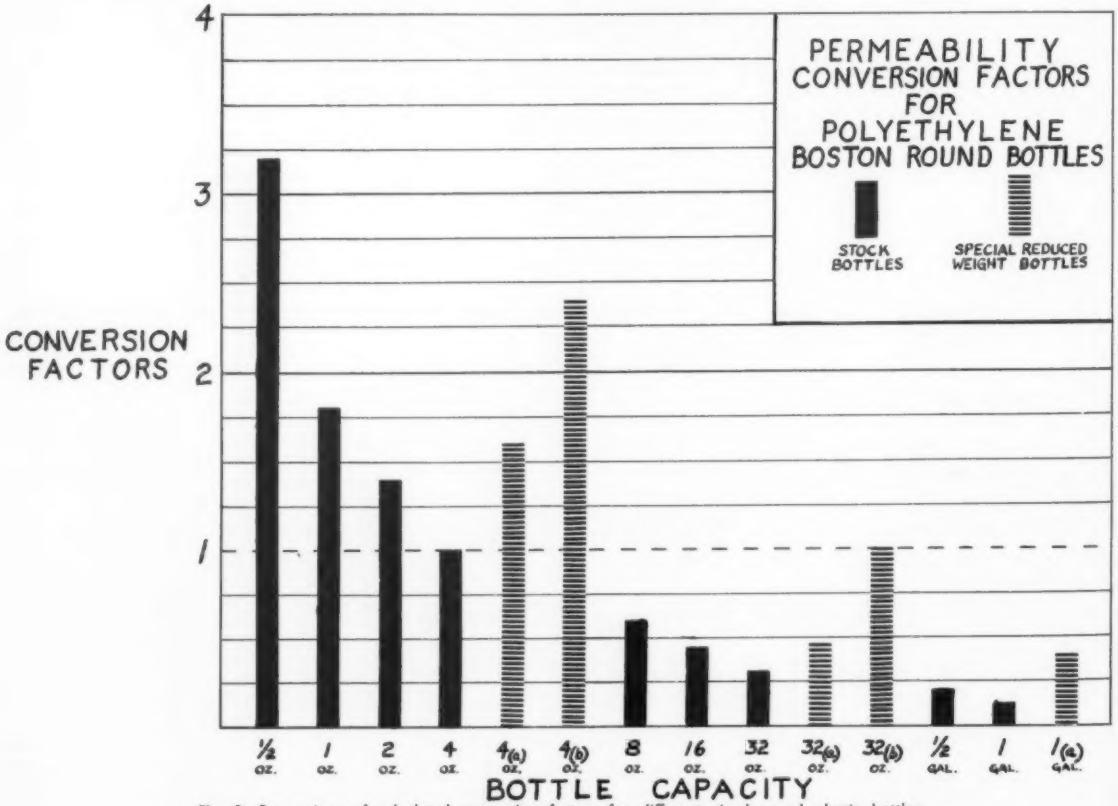


Fig. 2. Comparison of calculated conversion factors for different sized round plastic bottles. Note the sharp decrease in per cent permeability as the bottle size (volume) is increased.

TABLE 1

Basic Data and Calculated Conversion Factors for Stock Round Polyethylene Bottles

Bottle Capacity (fl. oz.)	Nominal Bottle Weight (gm.)	Surface Area* (sq. in.)	Wall Thickness† (in.)	Conversion Factor
½	3.5	6.8	0.034	3.2
1	7.0	10.3	0.045	1.8
2	10.0	15.4	0.043	1.4
4	16.75	23.8	0.047	1.0
(a)‡	10.8	23.8	0.030	1.6
(b)‡	7.2	23.8	0.020	2.4
8	32.5	36.3	0.059	0.61
16	53.0	57.5	0.061	0.46
32	103.	92.6	0.074	0.31
(a)‡	69.4	92.6	0.049	0.47
(b)‡	32.1	92.6	0.023	0.99
64 (½ gal.)	219.	145.	0.10	0.18
128 (1 gal.)	397.	228.	0.115	0.12
(a)‡	115.6	228.	0.034	0.41

*Surface area figures include the bottle neck, but assume a perfect seal across the bottle mouth.
†The average thickness is computed from weight and surface area measurements.
‡Bottles marked (a) and (b) are selected bottles of lighter-than-stock weight.

data for 4- and 32-oz., and 1-gal. bottles produced at selected weights lighter than the corresponding stock bottle. All bottles are of commercially available, low-density resin. Fig. 1 shows typical bottles used for test purposes, except for the lightweight containers included in the test data.

Permeability vs. size. Fig. 2 is a graphic comparison of the conversion factors shown in Table 1. These factors demonstrate the sharp decrease in per cent permeability as the bottle size is increased. Reducing the amount of plastic material used in the bottle, of course, causes a comparable increase in permeability. This is indicated by the conversion factors for the special lightweight bottles.

Test To Confirm Factors

In setting up tests to confirm the calculated conversion factors, a test liquid was desired which would have measureable permeation rates during a 28-day test period *(1)* over the full range of bottles from 1/2 oz. to 1 gal. at standard test temperatures of 73° F. and 120° F. Polar compounds, such as water or alcohol, which have a low permeation rate in 4-oz. bottles, would not show any significant loss from the gallon size. Compounds with very high permeation rates would not allow the development of good, consistent data in the smaller bottles. Technical grade acetone was selected for this testing since it has an intermediate permeation rate of approximately 20 per cent per year from a 4-oz. bottle.

The test group of bottles consisted of those using standard black phenolic caps with polyethylene liners for sizes up through 32 oz.; all-polyethylene closures for the special buttress finish on the 1/2- and 1-gal. sizes. At the same time, for comparison, a second group of bottles using pulp- and vinyl-lined phenolic closures, were put into the test. The permeability tests were sufficiently sensitive to show within a short period that the pulp- and vinyl-lined caps were not suitable for use with acetone.

Ratios established. The data in this report are drawn from the test group only. These results are listed in Table 2. In the last three columns, the ratios of the permeability losses of each of the test

(Continued on Page 70)

TABLE 2

Test Results of Permeability Losses of Stock Round Polyethylene Bottles Compared to Calculated Conversion Factors

Bottle Capacity (fl. oz.)	Test Bottle Weight (gm.)	Content Weight (gm.)	Weight Loss per 28 days (gm.)		Weight Loss per year (%)		Observed Ratio*		Conversion Factor Calculated (From Table 1)
			73°F.	120°F.	73°F.	120°F.	73°F.	120°F.	
½	3.55	12.5	0.61	7.29	68.5	780.	3.46	2.54	3.2
1	7.0	22.4	0.55	6.95	33.2	407.	1.68	1.32	1.8
2	9.55	42.9	0.74	11.22	23.0	340.	1.16	1.10	1.4
4	17.0	94.1	1.43	22.28	19.8	308.	1.0	1.0	1.0
(a)†	10.8	92.8	2.21	35.70	31.1	501.	1.57	1.63	1.6
(b)†	7.2	96.5	4.07	61.09	55.0	820.	2.78	2.66	2.4
8	31.8	186.1	1.6	23.1	11.2	161.	0.57	0.52	0.61
16	51.2	336.9	2.44	38.5	9.4	149.	0.48	0.48	0.46
32	102.2	678.9	2.82	48.5	5.4	93.	0.27	0.30	0.31
(a)†	69.4	684.6	4.9	75.4	9.3	141.	0.47	0.46	0.47
(b)†	32.1	674.5	7.8	139.9	14.9	258.	0.75	0.84	0.99
64	219.7	1513.	2.8	49.5	2.4	42.6	0.12	0.14	0.18
128	369.8	2825.	3.78	65.5	1.7	30.2	0.09	0.10	0.12
(a)†	115.6	2998.	28.35	337.	12.3	105.	0.62	0.34	0.41

*Ratio of yearly weight loss (%) to 4-oz. Stock Bottle.

†Bottles marked (a) and (b) are selected bottles of lighter-than-stock weight.

K. H. Pennington has been associated with S. B. Fuller and Fuller Products Company for 22 years. During the last eleven years, he has been with Boyer International Laboratories, a part of the Fuller organization. Mr. Pennington joined this group of companies as a window washer. Subsequently, he became a chemist and later a purchasing agent. His education has been self-developed along practical lines, with both his training and present activities based on his practical operating experience with his company.

Mechanization of semi-automatic bottle filling

By K. H. Pennington,
Plant Manager,
Boyer International Laboratories, Inc.,
Chicago

Mechanizing a semi-automatic bottle filling machine made possible the doubling of its filling speed. Also, the machine no longer requires an attendant to operate it. In reviewing how he and his organization developed this automatic bottling unit, Mr. Pennington stresses the importance of the electronic system and the arrangement for the correct counting in and counting out of bottles.

By mechanizing the semi-automatic filling operation on one of our lines, we have doubled our potential filling speed and have transferred our filling machine attendant for work elsewhere on our packaging line. Since we often run for a week at a time without changeover on H-A Hair Arranger, one of our major products, we thought we could advantageously mechanize its bottling. We have not only done this, but have arranged it to handle four bottle sizes—2-, 4-1/2-, 8-1/4-, and 16-oz. bottles.

Except for the 16-oz. professional size, these bottles are all oblong and must go through our equipment end to end. The extremely high cost of equipment specially built for our needs by recognized packaging machinery manufacturers challenged us to try our own hand at mechanization.

Hydraulics, Electronics

Our previous success in conveyorizing one of our fillers and maintaining the chain conveyor belt in continuous motion during filling (whereby we got a 50 per cent boost in production) gave us the inspiration to develop our own mechanized bottle filler. The starting point was to take one of our Ertel fillers, remove its foot pedal, and install a hydraulic action in place of the pedal movement. In connection with this, we installed an electronic timing unit.

Speeds of other units on this line limit our filling speed and we currently average between 80 and 90 a minute with our 4-1/2 oz. bottles. Our filling operation itself can run at speeds between 150 and 160 a minute. Further, we are convinced that we could triple our filling capacity by installing an additional twelve heads on each side of the twelve now operating with it.

Vital: Counting in, counting out. The heart of our mechanized operation is its electronic system. The focal point of it is the system of counting in and counting out twelve bottles. At the entering end of the filler, a counter counts off twelve bottles going into the machine, then actuates a Micro switch. Another counter (at the leaving end of the machine) counts out twelve bottles, then actuates another Micro switch. At each end of the machine a gate shuts off the movement of bottles through the equipment.

How Fill Takes Place

Once twelve bottles (no more, no less) are in position for filling and the switches have actuated, the filling head comes down This operates in conjunction with a vacuum gauge that controls the filling stage. It is basically a standard vacuum gauge and we find it functions effectively when using about 17 in. of vacuum while filling a product such as H-A Hair Aranger.

Vacuum can vary. While 17 in.

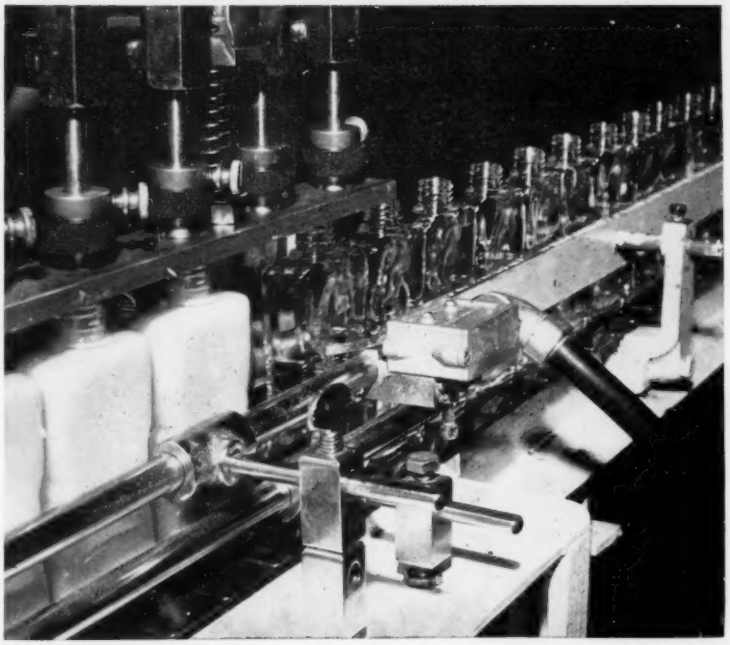
represents our preferred vacuum, the equipment can function with as low a vacuum as 14 in. When filling a very thin product, we can use as little vacuum as 10 in. However, if the product is cold, we increase the vacuum until it warms up. We can vary our hydraulic head pressure, but 85 lbs. represents a typical pressure. The hydraulic cylinder is basically standard and has a 1/4 h.p. motor. It is also equipped with a pair of solenoid coils and other standard engineering components.

Our hydraulic unit works off the electronic equipment. By action of the cylinder, it lowers the twelve filling heads. The fill starts while the vacuum is building up and performs the standard filling action typical of such machinery. Once 17 in. of vacuum are reached, an electrical switch in the electronic unit functions with the vacuum action and in turn actuates the hydraulic pump, which subsequently raises the filling head.

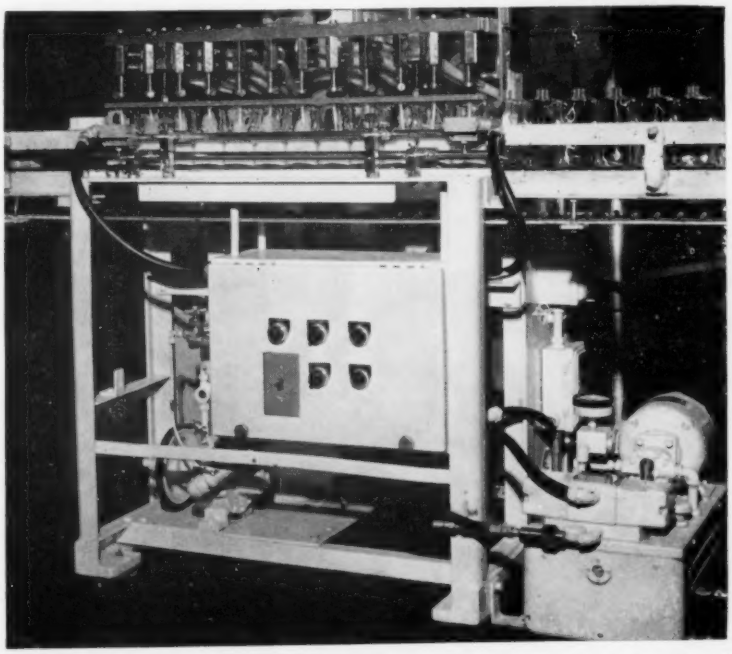
Job Of Centering Bar

This filler was originally equipped with a centering bar. We removed this bar at the time we conveyorized our filler. Now that we have mechanized the operation, we find the bar necessary. This makes sure that the heads and the bottles are properly aligned in order for the vacuum to function and the fill to start. The centering bar is actuated by a spring. This bar must be perfectly level and if the spring gets out of adjustment, this must be corrected. Otherwise the centering bar will not function properly as it moves down over the open necks of the bottles lined up for filling.

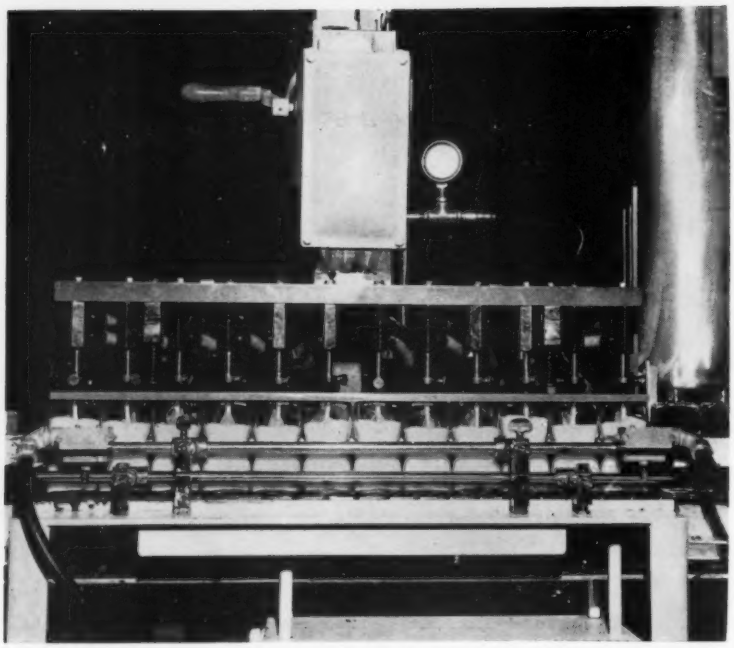
What the stops do. There is a stop on the entering end of the machine that works off the first filling head. The gate at the other end of the machine also serves as a stop. The purpose of the gate is to hold back the entering bottles until there are about 1-1/2 in. of space between the first of the entering bottles and the last of those leaving from the previous fill se-



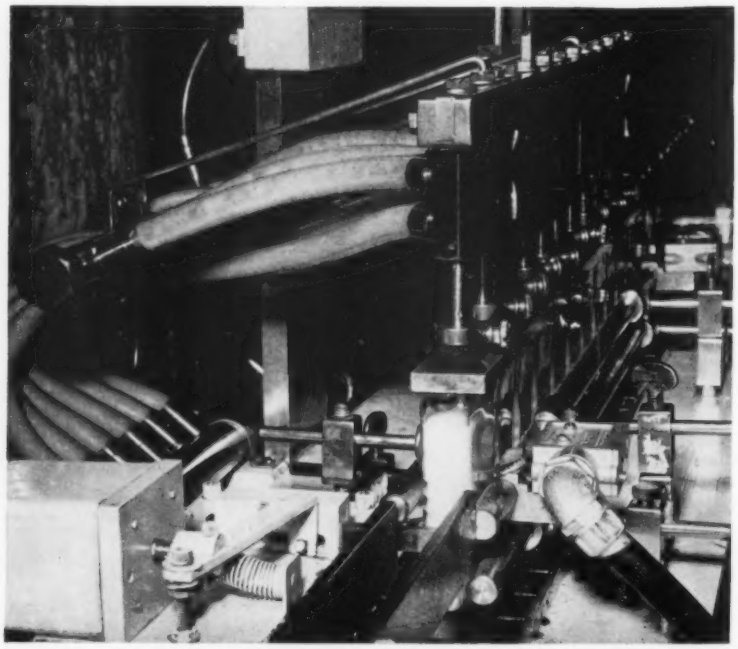
Focal control point of automatic bottling operation is counting-in, counting-out process. As last of twelve bottles filled (moving from right to left, at left) leave machine, exactly twelve bottles enter at right. Counter actuates Micro switch which closes a gate, shutting off movement of bottles. Machine does not function until twelve filled bottles have been counted out and twelve empty ones counted in. Counters tie in with specially-combined electronic system.



Hydraulic unit (lower right) works off electronic equipment (box in center) and by action of its hydraulic cylinder lowers twelve filling heads. Vacuum builds up to 17 in. while fill takes place. Electrical switch of electronic unit functions with vacuum action and actuates hydraulic pump — which raises filling head after filling. Typical hydraulic head pressure: 85 lbs. Unit has ¼ h. p. motor.



Centering bar (seen above bottles) insures alignment of filling heads and bottles. Correct alignment is necessary for vacuum to function and fill to start. Centering bar is spring-actuated, must be perfectly level. Correction is necessary if spring gets out of adjustment. Automatic filling requires greater container uniformity than semi-automatic. Machine can tolerate variation of plus or minus 1/16 in. in bottle width. Greater variations cause jamming on line.



Gate at each end of filling unit holds bottles in place during fill. Gate at discharge end of filler is barely visible in front of end-most bottle, holding bottles in place. Conveyor chain moves continuously during machine operation. Thus it continues to slide under bottles held stationary during fill. Use of oblong bottles dictates straightline filling operation (rather than rotary) in this operation.

quence. This assures correct spacing at the leaving end in order to get a proper flow of empty bottles at the entering end of the machine.

After mechanizing our operation, we find we need greater uniformity of containers than previously. We can tolerate a variation of plus or minus 1/16 in. in the width of the bottle. Any greater variation, however, causes jamming or other difficulty on the line.

Need Straightline Operation

Our use of oblong bottles necessitates our having a straight line filling sequence. These bottles simply do not lend themselves to being indexed in and out by star wheels leading in and out of rotary fillers—such as can be done with round bottles.

No attendant present. Now the filling operation takes place unattended. The man previously in charge of filling has been transferred to other work on the packaging floor and we find that either the labeler attendant or the man in charge of dumping bottles can give adequate attention to the filling operation and any difficulties that might arise in connection with it.

We installed the machine at the same level as the line itself and we have retained this level so that the filler is aligned with the conveyor chain serving the entire packaging line. This chain is an integral part of the line itself and moves continuously at a uniform speed.

We are convinced our successful handling of this project rested on our securing a proper counting-in and counting-out action. It took us quite awhile to get the most suitable electronic counters and we burned out a number of them in developing this operation. However, we knew that the system simply would not operate if we did not have a closely coordinated means of counting out exactly twelve bottles after filling and counting in precisely twelve new ones ready for filling. *(End)*

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James D. Winter received his B.S. and M.S. degrees from the University of Minnesota. In 1957 he received the achievement award from the National Institute of Locker and Freezer Provisioners, of which he is an honorary member. Mr. Winter is a member of Gamma Sigma Delta, Sigma Xi, and a charter member of Phi Tau Sigma. A member of the Institute of Food Technologists, he has authored a number of technical papers on packaging of frozen foods.

Shirley R. Trantanella was graduated from the University of Minnesota with a B.S. degree in home economics, and is about to complete the work for her M.S. degree. She is a member of Phi Upsilon Omicron, Sigma Delta Epsilon, and Mortar Board. Miss Trantanella also holds membership in American Home Economics Association and the Minnesota section of the Institute of Food Technologists.

Effect of packaging on keeping quality of frozen bread and sponge cake*

By James D. Winter,
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Shirley R. Trantanella,
Instructor,
Department of Horticulture,
Institute of Agriculture,
University of Minnesota,
St. Paul

With increasing attention being given to the freezing of foods on a commercial basis, by no means have bread and cake been overlooked. Although this has not appeared to be too favorable in the past, more recent studies of the use of various packaging materials have indicated that freezing of these products is feasible. In their description of the experimental work, Mr. Winter and Miss Trantanella explain, step by step, the entire procedure used in conducting the tests. Tabular results show taste-panel scores for flavor freshness and crumb firmness, and weight changes for a storage period up to ten months; also included are compressimeter measurements for the white bread.

Previous experiments in this laboratory and elsewhere (*3*) have shown that the palatability and general acceptability of certain frozen foods in storage may be significantly affected by the type of packaging materials used.

This study was designed: (a) To compare flavor freshness and desirability of crumb firmness of commercially wrapped white bread with samples of same overwrapped in polyethylene film, in polyethylene-coated cellophane with and without antioxidant treatment, and in aluminum foil; (b) to compare flavor freshness and desirability of crumb firmness of sponge cake packaged in polyethylene film with that of samples packaged in polyethylene-coated cellophane and in the ordinary bakery carton; and (c) to determine weight loss, if any, of both products during the storage period.

Storage temperatures above the normal range of 0° F. (−17.78° C.) or lower were used in order to shorten the period required for taste panel evaluation. Therefore, the results indicate differences, if any, among packaging materials, but do not necessarily indicate storage life of the products at normal storage temperatures.

Materials And Methods

Bread. Freshly baked, sliced, and commercially wrapped white bread was obtained from a large commercial bakery in Minneapolis. The loaves were selected from the *middle* of one batch from the oven in order to eliminate possible variability in loaves on the outside edges. The loaves were delivered to the laboratory soon after they came off the line at the bakery, packaged in the commercial wrap.

Sponge cakes. The sponge cakes were made from a tested sponge cake formula, using fresh eggs not more than 24 hours old. A Hobart electric mixer was used for beating the egg whites and yolks, and for combining the boiling water and a portion of the sugar with the egg yolks. The flour, combined with the cream of tartar, the salt, the remaining sugar, and the beaten egg whites were folded in by hand, using a wire egg-whip. Vanilla was not used.

When all ingredients were combined, 410.0 gm. of cake batter were put into ungreased 8x3-in aluminum angel food cake pans. The

* Paper No. 3620 of the Scientific Journal Series of the Minnesota Agricultural Experiment Station. This study was partially financed by a grant from the Bakelite Company, Division of Union Carbide Corporation.

cakes were baked in a 350° F. oven of a gas range for 30 minutes. After baking, the cakes were inverted, cooled 35 minutes, and removed from the pans. One cake for each treatment and storage period (total: six cakes) was prepared on each of four consecutive days, making a total of 24 cakes for the test.

Packaging materials. The following materials were used, all of them being in bag form except the aluminum foil, the waxed paper bread wrap, and the bakery carton:

Lot	Description
A-1, C-2	*Polyethylene bag, 0.0015 in. thick
A-2	‡Unwaxed bakery carton
B-1	†Polyethylene bag, 0.0015 in., inside treated with Tenox II
B-2, C-1	*300 MSAD cellophane coated with 0.0015 in. polyethylene
D	†300 MSAD cellophane coated with 0.0015 in. polyethylene, inside treated with Tenox II
E	†Commercial bread wrapper: 24-lb. ream weight opaque sulfite, coated with polyethylene-wax blend
F	†Aluminum foil, heavy duty, 0.001 in. thick

*Used for both bread and sponge cake.
†Used for bread only.
‡Used for sponge cake only.
Note: Polyethylene density: 0.918.

Packaging methods. All of the commercially wrapped bread, except Lot E, was overwrapped in the materials indicated. The various bags were sealed with a thermal impulse heat sealer, without air being evacuated. However, the seal was made close to the product in order to reduce air space to a minimum. A label identification was inserted and heat-sealed in the excess length of the bag above the first seal. The samples in aluminum foil were packaged by the customary "freezer wrap" method. An interval of four to six hours elapsed in the course of the bread packaging operation during which time samples were at room temperature. The bakery cartons used for sponge cake were closed in their normal manner, but not overwrapped or sealed.

Freezing. The bread was spaced one layer deep on shelves and frozen in the storage room at approximately 8° to 12° F. (−13.33° to −11.11° C.). The sponge cake, after cooling and packaging was placed one layer deep on the refrigerated shelves of an upright-type home freezer, operating at approximately −10° F. (−23.33° C.). In a few days, the sponge cake samples were transferred to the low-temperature room in which the bread was frozen and stored.

Storage. The bread and sponge cake samples were stored in a large, commercial type, low-temperature room. All samples were stored on wooden shelves, one layer deep, with a space of about one inch between each of the packages. A Bristol recording thermometer was used to determine the storage temperature, which was found to fluctuate between about 8° to 12° F. (−13.33° to −11.11° C.). The bread was stored for 4, 6, and 10 months; the sponge cake for 3 and 7 months.

Taste panel evaluation. A panel of five qualified judges was used to determine flavor freshness and desirability of crumb firmness of the bread; six judges were used for the sponge cake. The same judges were used throughout each experiment. The judges used a score of 7.0 as the highest for the fresh bakery bread. They were instructed that scores below 5 should indicate a commercially unacceptable product.

A scoring range of 1 to 10 was used for the sponge cake, with 10.0 the optimum. A cake which was scored 4 or lower was considered unacceptable.

The bread was thawed at room temperature for approximately three hours, and the two outside slices at each end of each loaf were discarded. Each judge received one slice for sampling. The sponge cake also was thawed at room temperature, and each judge received one slice.

A comparable, freshly baked sample of bread and cake was used at each judging period. The sponge cake was made by the same formula as those which were frozen, while the bread was obtained fresh from the commercial bakery. The panel first agreed on an acceptable score for the reference sample on flavor freshness and desirability of crumb firmness. The judges then individually scored the remaining samples. This technique provided each judge with a uniform basis of comparison from one judging period to another. The maximum number of samples judged at one time was six, in addition to the reference sample.

Measurement of crumb firmness. A Baker compressimeter was used to determine the force necessary to penetrate the slices of bread to depths of 0.5 to 4 mm. from the surface, at intervals of 0.5 mm. Firmness values were determined as averages of readings taken from eleven inside slices of each loaf for each treatment and storage period. The wrapped bread was allowed to come to room temperature before firmness was measured, requiring approximately five hours. No compressimeter measurements were made for the cake.

Weight records. All weighings were done at the prevailing storage temperature, on a laboratory balance held in the storage room for that purpose. Some slight gains in weight were recorded, apparently due to unavoidable moisture condensation on the package. All weighings included the weight of the packaging material.

Analysis of data. Four replicate samples were used for each treatment and storage period. A statistical analysis was made of the taste panel scores to determine the significance of differences.

Results

Bread. A statistical analysis of

TABLE 1

Palatability and crumb firmness scores and weight loss of frozen white bread in various packaging materials stored at 8° to 12° F.

Lot	Description of Packaging Material*	Storage Period (months)	Scores		Weight Loss‡ (average) (per cent)
			Flavor Freshness† (average)	Desirability of Crumb Firmness† (average)	
A-1	Polyethylene bag, 0.0015 in. thick	4	7.1	7.1	0.05
		6	6.9	7.0	0.06
		10	6.8	6.5	0.08
B-1	Polyethylene bag, 0.0015 in., inside treated with Tenox II	4	7.2	7.1	0.03 (gain)
		6	6.9	7.1	0.03 (gain)
		10	6.9	6.5	0.03
C-1	300 MSAD cellophane coated with 0.0015 in. polyethylene	4	6.8	6.9	0.27 (gain)
		6	6.7	7.2	0.07 (gain)
		10	6.8	6.3	0.05 (gain)
D	300 MSAD cellophane coated with 0.0015 in. polyethylene, inside treated with Tenox II	4	7.0	7.2	0.27 (gain)
		6	7.0	7.0	0.00
		10	6.7	6.4	0.02 (gain)
E	Commercial bread wrapper: 24-lb. ream weight opaque sulfite, coated with polyethylene-wax blend	4	6.9	6.9	2.27
		6	6.7	6.3	4.78
		10	5.5	4.5	7.24
F	Aluminum foil, heavy duty, 0.001 in. thick	4	6.9	7.1	0.16
		6	7.2	7.1	0.36
		10	6.8	6.6	0.68

*With the exception of Lot E, each packaging material was used as an overwrap for the commercial bread wrapper described under Lot E.
†The scores for the fresh sample were 7.0 at each judging period — scores below 5 indicate a commercially unacceptable product.
‡Expressed on basis of original package weight.

the taste panel data indicated no significant differences in flavor freshness and desirability of crumb firmness among the loaves of bread stored in any of the packaging materials used, at the four- and six-months storage periods. However, after ten months, the scores for the bread in the commercial bread wrap (Lot E) were significantly lower.

The taste panel scores for the bread showed a remarkably small loss of flavor freshness and crumb firmness during the entire storage period, except for the loaves wrapped in commercial bread wrap.

Compressimeter readings, measuring the force necessary to penetrate the bread, increased within four days after the bread was frozen. A further increase was recorded after storage for four months, but no additional increase was found after ten months. A comparable difference in the desirability of crumb firmness was not shown in the scores of the taste panel.

Sponge cakes. Scores for flavor freshness and desirability of crumb firmness of the sponge cake packaged and stored in polyethylene-coated cellophane and in polyethylene bags were significantly higher, at the one per cent level, than those for comparable samples stored in bakery cartons. The superiority of the two transparent films was very pronounced at both the three- and seven-months storage periods. There was no significant difference between the scores for the sponge cake stored in these two films. In both instances the scores remained relatively high during the entire storage period, although there was a noticeable decrease at the seven-month period.

No appreciable loss in weight occurred in any of the lots during the various storage periods, except in the bread packaged in the commercial bread wrap (Lot E) and in the sponge cake packaged in the bakery carton.

A summary of the data is shown in Tables 1, 2, and 3. Compressimeter data were taken for eight depths of penetration, but readings for only three depths are shown in Table 2, as the readings at all depths followed a similar pattern.

Discussion

Cathcart (*1*) found that frozen bread hermetically sealed in normal atmosphere, or sealed in vacuum, remained salable for approximately one year. Small losses in flavor freshness and desirability of crumb firmness were found in this study during storage periods up to ten months, except with samples stored in the commercial bread wrap (Lot E). These results appear to be in agreement with Cathcart to the extent that frozen bread in certain packaging materials was found to have a relatively long storage life.

Recent work by Pence and his colleagues (*2*) indicated that the storage period for bread at 0° F.

TABLE 2

Compressimeter measurements of crumb firmness of white bread in various packaging materials after storage at 8° to 12° F.

Lot	Description of Packaging Material*	Storage Period (months)	Average Reading† Depth of Penetration 1 mm.	1.5 mm.	4 mm.
A-1	Polyethylene bag, 0.0015 in. thick	4	2.4	3.5	6.4
		6	2.0	3.2	6.1
		10	2.4	3.4	6.9
B-1	Polyethylene bag, 0.0015 in., inside treated with Tenox II	4	2.6	3.8	7.2
		6	2.4	3.7	6.9
		10	2.5	3.8	6.5
C-1	300 MSAD cellophane coated with 0.0015 in. polyethylene	4	2.5	3.7	7.0
		6	2.8	4.0	7.3
		10	2.9	4.4	7.1
D	300 MSAD cellophane coated with 0.0015 in. polyethylene, inside treated with Tenox II	4	2.7	3.7	6.9
		6	2.4	3.7	6.6
		10	2.4	3.6	7.2
E	Commercial bread wrapper: 24-lb. ream weight opaque sulfite, coated with polyethylene-wax blend	4	2.3	3.5	7.0
		6	2.3	3.7	6.8
		10	2.8	4.5	7.5
F	Aluminum foil, heavy duty, 0.001 in. thick	4	2.6	3.7	7.6
		6	1.6	2.9	6.2
		10	2.9	4.2	7.5
Fresh samples, not frozen			1.8	2.5	5.2
Samples frozen and stored for 4 days			2.0	3.1	6.5

*With the exception of Lot E, each packaging material was used as an overwrap for the commercial bread wrapper described under Lot E.
†Force in gm. $\times 10^{-1}$ to penetrate to depth indicated.

probably should not exceed one month. However, these workers were not using packaging materials of low water-vapor permeability.

The results in this study with bread are of particular interest because of the relatively high storage temperature of 8° to 12° F. (−13.33° to −11.11° C.) used. At these temperatures, a loaf of bread is slightly compressible under hand pressure. It is unlikely that the small losses reported were due to any lack of critical judgment by the panel, which was composed principally of homemakers.

Summary

White bread and sponge cake were packaged, frozen, and stored for periods up to ten months and seven months, respectively, at approximately 8° to 12° F. (−13.33° to −11.11° C.). All the bread was packaged in a commercial bread wrap, some of it being overwrapped in polyethylene bags; some in polyethylene-coated cellophane bags with and without antioxidant treatment; and some in aluminum foil

TABLE 3

Palatability and crumb firmness scores and weight loss of frozen sponge cake in various packaging materials stored at 8° to 12° F.

Lot	Description of Packaging Material	Storage Period (months)	Scores: Flavor Freshness* (average)	Desirability of Crumb Firmness† (average)	Weight Loss‡ (average) (per cent)
A-2	Unwaxed bakery carton, no overwrap	3	6.3	6.8	6.1
		7	1.6	1.4	12.6
B-2	300 MSAD cellophane coated with 0.0015 in. polyethylene	3	9.0	9.1	0.04 (gain)
		7	7.6	8.0	0.03 (gain)
C-2	Polyethylene bag, 0.0015 in. thick	3	8.8	8.8	0.18
		7	7.3	7.7	0.08 (gain)

*The score for the fresh sample was 10.0 at each judging period.
†The score for the fresh sample was 9.7 at the first judging period and 10.0 at the last one.
‡Expressed on basis of original package weight.

New types of Patapar® give you a

REAL BARRIER

against penetration of

GREASE, FATS, OILS

As an inner protective barrier for multiwall bags . . . or wherever a grease-proof material is required, new types of Patapar Vegetable Parchment meet the most exacting requirements. These special grease-proof Patapars stop penetration. Oil will not spread on Patapar's surface. There is no grease "crawl".

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Permanent high wet-strength is another quality of the many different types of Patapar. And, made from pure cellulose, Patapar is odorless, non-toxic. It is furnished plain or colorfully printed.

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VEGETABLE
PARCHMENT
HI-WET-STRENGTH · GREASE-RESISTING
HEADQUARTERS FOR VEGETABLE PARCHMENT SINCE 1885

0.001 in. thick. The sponge cake was packaged in polyethylene bags, polyethylene-coated cellophane bags, and in bakery cartons without overwraps.

The taste panel found no significant differences in flavor freshness and in desirability of crumb firmness among the samples of bread and cake stored in any of the packaging materials used, with the exception of samples in the commercial bread wrap and the bakery carton. Scores for the cake in the bakery cartons were significantly lower after three months. The differences in the bread wrapped in the commercial bread wrap and the sponge cakes in baking cartons were very pronounced after ten months and seven months, respectively.

Compressimeter readings showed an increase in the force necessary to penetrate the bread, which occurred within four days after the bread was frozen. A further increase was recorded after storage for four months, but no additional increase was found after ten months. No appreciable weight loss occurred in any of the lots during the various storage periods, except in samples stored in the commercial bread wrap and the bakery cartons.

Acknowledgments

The authors are indebted to Miss Carol Bryan and Miss Jean Dzubay for assisting in the making of the sponge cakes and in the conducting of the taste-panel appraisals. Thanks also are due Mrs. Gladys L. Olmsted for weighing the samples and for making the compressimeter tests on the bread, and to Frederick A. Gowen for making the statistical analysis. The co-operation of the Zinmaster Baking Company, Minneapolis, Minnesota, was greatly appreciated in providing the necessary freshly baked bread for this investigation.

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2. Pence, J. W., *et al*, "Studies on the preservation of bread by freezing," *Food Technology*, 9 (1955), 495-499.
3. Winter, J. D. and Hustrulid, Andrew, "Flavor factors in frozen food wraps," *Modern Packaging*, 24 (1951), No. 9 (May). *(End)*

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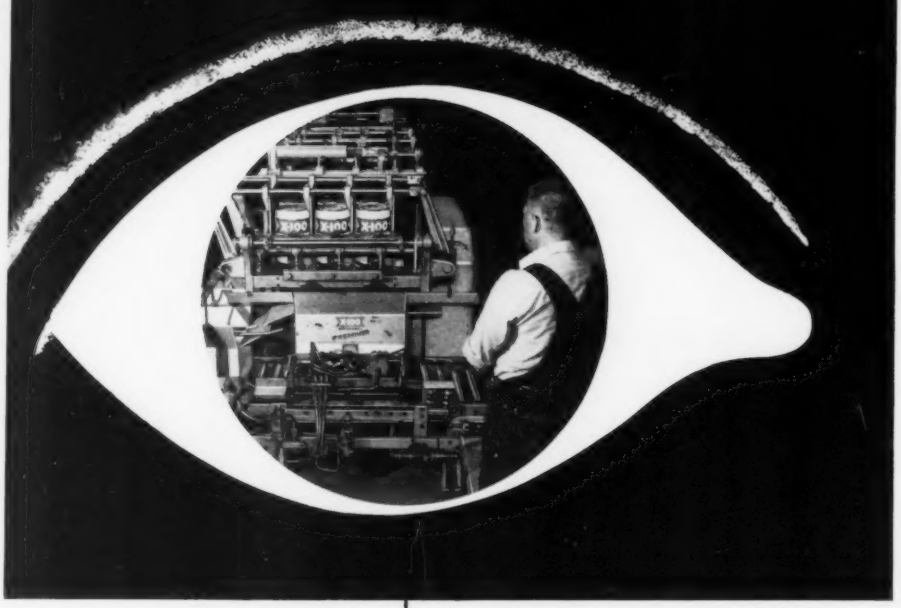
YOU SEE STANDARD-KNAPP EQUIPMENT



PACKER PROTECTS BIG PACKAGE APPEARANCE DURING CASE LOADING

Five-quart cans filled with motor oil are big, heavy and therefore unusually susceptible to damage. Case loading such cans requires equipment with deft, sure and smoothly coordinated motions—otherwise package appearance will suffer.

This is precisely the kind of service the Standard-Knapp Model 830-3 Packer is providing at Shell Oil Company's new lubricant canning plant at Wood River, Ill. It is loading those large, weighty cans vertically into cases at the rate of more than 100 cans a minute—with careful, cushioned movements that bring cans and cases together in a smooth, continuous flow.

If package appearance is important to you, then you want Standard-Knapp equipment. *We cordially invite your request for literature on our packers, labelers, case gluers and sealers, carton make-up units.*

EMHART MANUFACTURING COMPANY
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Bertram R. A. Smith is a graduate of Connecticut State College (now known as the University of Connecticut) with a B.S. degree. Following graduation, he taught a laboratory course there for a year. He has been associated with Chesebrough-Pond's Inc. and its predecessor companies 29 years. Mr. Smith is a member of the New England Society of Package Engineers and has participated in the New England Quality Control group of the National Association of Manufacturers.

Quality control of container components

By Bertram R. A. Smith,
Chesebrough-Pond's Inc.,
Clinton, Connecticut

However well known may be the abstract principles of quality control, the real test comes in their application to particular projects—such as a control of container parts. However deeply a company may get into statistical quality control and its subtleties, there has to be a starting point somewhere. Mr. Smith offers a concise and practical approach to such quality control. He discusses standards, the establishing of a system, the taking of samples, including methods of checking, supplier follow-up, and keeping adequate records. Although he and his company are deeply engrossed in the more complex and scientific phases of quality control, his insistence on simple and direct approaches should be of help to those seeking to launch such a program.

Every quality control program has to have a starting point. No matter how technical and complicated a company's program becomes, there must be an initial set of procedures. These might be regarded as a manual—such as for the quality control of container parts. It must approach the subject from two directions: (1) Standards and their determination, and (2) methods and procedures assuring the application of these predetermined standards. In other words, you have to have ways of arriving at the acceptability of components when checked against standards.

Probably the origin of standards differs in various organizations. Generally the arrival at standards would be as follows:

1. Decision to purchase.
2. Suppliers qualified.
3. Selection of merchandise.
4. Compatibility with product to be used.
5. Determination of standards of acceptability.

In our organization, standards which are set up for quality, stock, gauge, color, and printing copy are a function of purchasing.

Reaching an agreement. For us, standards represent an agreement reached between the selected supplier or suppliers and our purchasing department. These may be actual specifications developed by the supplier and in accordance with tolerance standards as set up by the trade. I refer to material and container standards such as those worked out by the Glass Container Manufacturers Institute. In such instances, these standards and tolerances might be called the law or court of last appeal. Such standards take the form of approved samples of the merchandise, swatches of color, and printing proofs.

Handling Of Samples

In the case of color swatches, one portion is returned to the supplier. Frequently, in subsequent visits to a supplier's plant, we find these "standard agreements," shall we say, have become attached to its plant work orders. As a result, they go right along with the material or parts involved until the order is complete. These agreements are then filed for use with any future orders for the same parts. Another portion, on which appears a purchasing department signature and the date of approval, is sent to our factory quality control department. This is filed and is protected against exposure to light. It is used as the control for each succeeding delivery of the container part.

Annual replacement. With labels, the control usually is a section of a pulled sheet from the first run. From experience it has been found that controls for labels should be replaced at least yearly. Although care is taken that these samples be stored away from light, the reaction of the ink to the paper and the normal aging of the stock itself necessitate such a replacement program.

With printing, a duplicate proof together with color controls is usually used as a standard for acceptability.

Check On Reaction

Through the years, experience has proven a need for uniform checks of any reaction between the

container and the product in contact with it. Taken from the original sampling, a quantity of all container parts which may come in contact with a product is sent to the control department of our research division. Reaction to coating is checked by immersion of the container in the product, by noting the reaction to volatile ingredients of the perfumes, and is checked by hand contact with the container, also. These checks may involve such problems as reaction to the vinyl coating of lipstick shells and jar covers, or reactions affecting the varnished surface of cans and paper containers.

Clearances for use of such container parts are received promptly from the control laboratory by quality control and become a matter of record.

Establishment Of System

In order to initiate such a system of control of containers in a plant where awareness of variation was never faced but was discovered by trouble on a production or assembly line, those launching it must do considerable extensive groundwork.

This can be approached by adopting the following procedures:

1. Accumulation of representative samples of currently used parts of containers which have been proven acceptable.

2. Tabulation of general descriptions and, wherever possible, specific specifications from suppliers. For this, two methods are suggest ed:

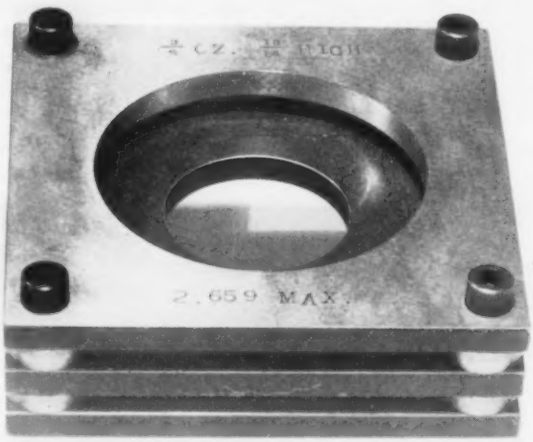
   a. Direct request.

   b. Supplier's description of material to be delivered as included in the acknowledgment of order.

3. Establishment of tolerances as to adaptability to user's equipment.

The adoption of such a procedure became the task of the writer some years ago and has proved very successful.

Help from suppliers. It is gratifying to note that in practically all instances, complete cooperation was enjoyed with the suppliers involved. In fact, it has been proven of pertinent advantage where errors in fit or matching of parts have been discovered through the initial sampling for quality control check-up. Often it has been possible to compensate for slip-ups or for the frailties of the human element; there has been time for the supplier to make replacement before actual need for the parts in the user's production program.



This gauge checks drop-in fit of metal pan which goes into polystyrene part. Gauge checks outside diameter of pan and sidewall height. Part must drop in or be tapped in without forcing.

TECH DATA

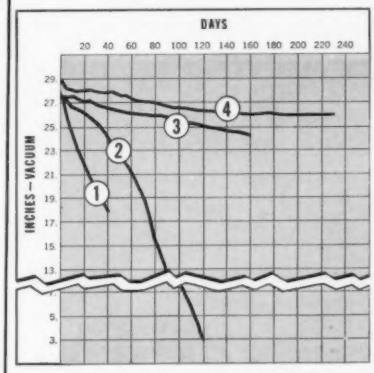
from STAN-PAK T.M.

BARRIER PROPERTIES

One special problem in vacuum or controlled atmosphere packaging is the maintenance of high vacuum or low oxygen content over an extended period of shelf life. To solve this problem, Standard Packaging Corporation offers a range of materials, the choice depending upon persistence of protection required. The barrier properties of four particular films are illustrated here.

GAS PERMEABILITY OF FLEXIBLE TRANSPARENT PACKAGING MATERIALS

Pressure rise in vacuum packaged pouch with 50.3 sq. in. transmission area



(1) FLEXAR 102 (3) FLEXAR 12
(2) ARPEX 101 (4) ATMOCEL 5

These materials—just four of the many film, foil and paper combinations developed by Standard—are recommended for packaging frozen food, cheese, luncheon meat and other products requiring low WVTR and GTR. They are available plain, or printed by flexography or gravure.

For additional data on the laboratory tests and samples of the films, write to our Technical Director.

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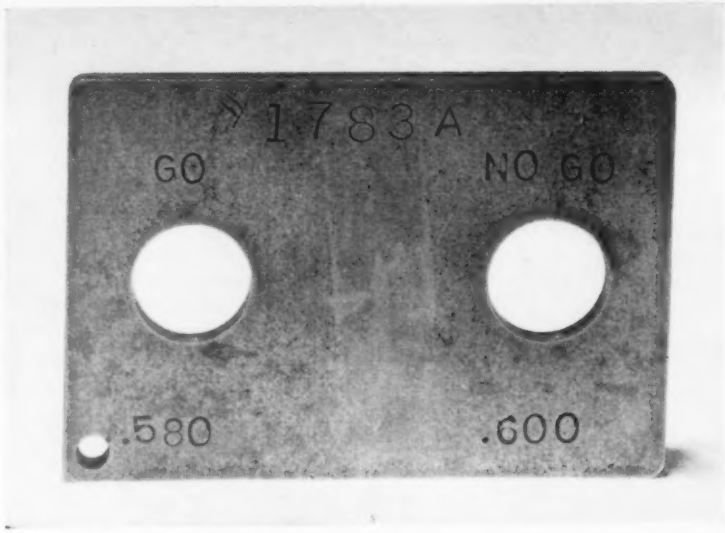

By using this gauge to check the outside diameter of the beads of a metal cap component, production line difficulties are avoided. Any part not meeting standards of this gauge would cause "fall-out" before or during final assembling of components.

Avoiding Trouble

One frequently learns "by doing," but sometimes he learns by "not doing" or following correct practices. An instance of this came up a few years ago where our management felt a second supplier was needed to assure continuity of delivery of one of the important items in the line of products. Specifications were passed and samples worked out. This happened to be a brass container with a three-ring or bead finish around the base.

Everything worked out fine except that the outside diameter of the bead was discovered to be an important factor in holding the container while the product was being processed. A variation here might cause a "fall out" before the product had been processed.

Checking up pays off. By our method of check-up, this wholly unrelated factor (unrelated to the general appearance of the finished product) was brought under the scrutiny of quality control. Gauges were made and all subsequent difficulty prevented. Many such seemingly trivial incidents often cause dollar waste and production curtailment.

Prevent or minimize just three or four such incidents and you save many times over the cost of maintaining such a quality control system.

Thread gauge for 35 mil C.T. metal cap shows maximum and minimum limitations as set by standards.

Sampling Container Parts

Basically, as a function of any plant, this should be subdivided four ways.

A. Taking of samples
B. Methods of checking
C. Supplier follow-up
D. Historical files

A. Taking Of Samples

A plant policy establishes the practice that everything inbound must pass through the receiving department. This becomes the logical point for the taking of any samples. At the time container parts are being accepted and checked against the trucker's papers, samples of each part of a container being received are taken at random from the lot.

Random sampling could be described as opening a number of cartons, grabbing out (and I mean not selecting) a handful or the equivalent from near the top, center, and bottom of the cartons. This, plus the fact that the person taking the samples is strictly disinterested in any result, should give a comprehensive cross section.

Record the details. The number of samples is somewhat in proportion to the quantity involved in the delivery. These samples are placed in a standard metal clasp 7½ x 10½ envelope. All information pertinent to identification is recorded on the front (item, supplier, receiving memo number, date, and any special information concerning the parts in the lot).

These samples are delivered the same day to quality control for checking. Since plant policy programs inbound container parts for the following month's use, there is ample time for checking. However, should any material be needed for immediate production use, quality control is to be notified so that a "release for production" can be determined at once.

B. Methods Of Checking

The methods for checking container parts become broader and more specific as one becomes more familiar with the product, adoption to production filling and assembling, and learns more concerning how the parts are processed in the course of fabrication at the supplier's plant. Basically the information underlying these methods can be listed four ways:

1. A knowledge of the specifica-

at Rich Products

Aerosol filling spurts 50% with rotary piston filler

During the past six months Rich Products has increased production output for aerosol packed whipped dessert topping by a full 50%. At the same time line personnel was cut by one-half.

A major reason for this increase was Rich's switch to a Pfaudler rotary piston filler.

Fast fill without spill—Rich fills from 20,000 to 40,000 seven- and twelve-ounce cans in an 8 hr. day. In spite of this speed and in spite of the small can openings, Rich holds accuracy to one or two grams on both sizes.

Easy sanitation—There's no place for a food product to get trapped on a Pfaudler filler. Cleaning is so simple, Rich accomplishes it with one man in just one-half hour. He removes only two parts at each station to get thorough cleaning. Rich reports that the bacteria count on toppings is ZERO.

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Just right for heavy products in aerosol—Pfaudler fillers are particularly well suited to heavy foods like Rich's topping and also to such products as tooth paste and shaving creams.

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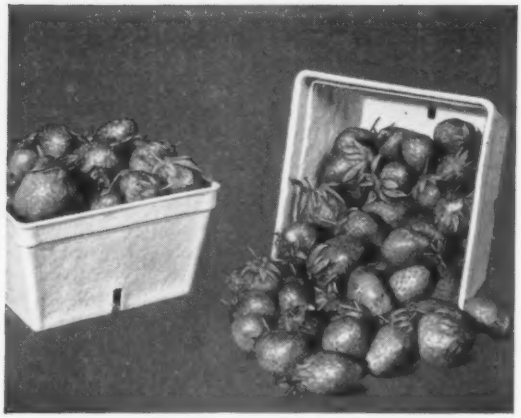

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Years of experience in the field of molded pulp coupled with modern plants and manufacturing skills, are available at Keyes to design and produce a more efficient, more economical packing for your products. Our Product Development Division will be glad to supply further information and cooperate with you in developing contour packaging for your products.

Product Development Division, Dept. 42

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Here's news that fairly sizzles with excitement. Now, Avery's revolutionary MODEL 100 LABELER automatically reduces costs by *speeding* pressure-sensitive labeling. Over 3 years in development, this efficient unit applies *individual die-cut Avery Labels* in exacting register on most all surfaces . . . flat, rounded, concave, or irregular. Now, you can have quality labels with surprising economy.

Fed from a roll which can supply up to 20,000 labels without reloading, Avery's MODEL 100 LABELER easily can apply *from 40 to 300 labels per minute!*

Ruggedly compact, Avery's *automatic* MODEL 100 LABELER is suitable for mounting at various angles and may be modified substantially to meet individual needs. Capable of operating as an integral part of existing or contemplated production lines, *it is designed simply to cut costs!* If you mark, identify, or label *anything*, this remarkable automatic Labeler is worthy of your early investigation.

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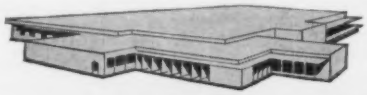

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Manufactured and distributed Throughout the World. For other countries, write **Foreign Operations,** Avery Adhesive Label Corp., Monrovia, California.

P.S. AVERY FILE FOLDER LABELS, CORRECTION TAPE, PHOTOMOUNTS, AND PRICE MARKING LABELS ARE AVAILABLE AT STATIONERS EVERYWHERE.

One COMPAK PACKAGES all CANDIES

Twist Wraps • Pan Goods
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Mr. Carl Lorenz of **barg & foster's**, prominent repacker says: "To increase profits on today's market we *had* to reduce costs. The Hayssen COMPAK offered the utmost in cost reduction."

The Hayssen COMPAK is a complete packaging department in a single machine. It does offer the utmost in packaging cost reduction and versatility. Several repackers are now packaging more than 60 varieties on the same COMPAK. Here's how you can increase your profit margins:

1. Purchase your packaging material in Roll Stock, the absolutely cheapest way material can be purchased.
2. The automatic COMPAK: forms, fills and seals your package without intermediate steps or hand labor.
3. The COMPAK occupies a floor space of 3′ x 5′, and in many cases turns out the work of from 6 to 12 hand packers.

As it was so aptly put by Mr. Krempa of King Nut Co., Cleveland; "We paid for our COMPAK twice by not buying it sooner." Don't let this happen to you, where you're paying for a COMPAK and do not have it. Contact Hayssen TODAY!

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tions for the parts to be checked.

2. A knowledge of the manufacturer's procedures for making the parts.

3. Tolerances allowable for the supplier and for our equipment.

4. Based on the above, our judgment as to what constitutes a workable, acceptable quality for the part in question.

Actually a set of checks must be devised for every style and type of container. Over the years since the adoption of this system of quality control, many means of determining quick and accurate usability between parts on many of the containers in use have been established. Such a system becomes more of a "must" with every introduction of automatic handling of container parts.

Develop specifications. For relatively permanent packages of products in the line, rather detailed specifications are worked out. In these, the manufacturer states his necessary tolerances to fit, outside and inside diameters, finish, etc. A copy is filed for reference both in our main office and the plant.

Frequently there is more than one supplier for the same container part. Each manufacturer may have different equipment or different methods of completing or finishing a part. By our knowledge of this, we are aware of his limitations which in turn enables us to know just what to expect.

Use Of Gauges

"Go—no go" gauges have either been procured from suppliers or made here in the plant. Manufacturer's workable tolerances have been determined, and a fair knowledge of the "how" of parts processing has been acquired. Only through familiarity with each product involved can a complete file of knowledge be accumulated and an adequate checking system be worked out.

Conditions creating a problem frequently might set off a chain reaction which results in a positive check for all future parts of a similar nature.

There was an instance where, in the middle of a run, a metal container pressed to form a pan (which in turn must be a drop-in fit in another part made of polystyrene) was discovered to be too tight. The pan had to be forced in. It was determined that any distortion due to this force fit could not work against us. The metal part supplier was notified and he approved the additional labor for use with the balance of the lot.

We designed our own. However, we insisted that some type "go—no go" gauge be devised so that actual control other than a "comparison finger feel check" could be made of future samples. This company made a two-tier metal affair with maximum and minimum openings. So if the pan would drop through or be tapped through, we knew the pan thus checked would present no trouble as to fit.

In this instance it developed that a dull die which grew steadily worse caused the trouble. Also, the fact that the supplier's job foreman had set up the run close to the plus tolerance added to the difficulty.

A supplier who realizes that actual check-ups are being made of each item supplied is more prone to careful work. Thus, such a problem as described above may be a blessing in disguise for both parties.

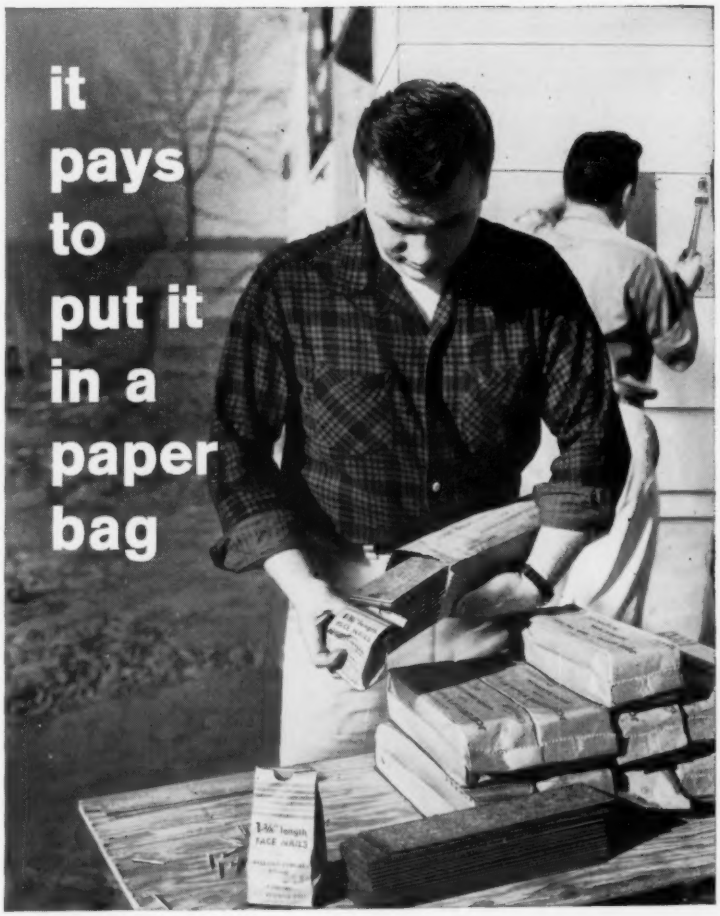
C. Supplier Follow-Up

Should it so happen that an initial quality check-up of any incoming container parts disclose borderline or doubtful acceptability, a re-sampling is made. These second samples are taken from both cartons already sampled and from several additional cartons. If these samples again prove doubtful, the storekeeping department is notified that the parts are not at that moment certified for production.

Next, a production line test is set up as promptly as convenient, using both opened and unopened cartons of parts. Should this still prove unsatisfactory, the supplier is notified of the trouble. From this both parties reach agreement concern-

when you package a product for

FIELD ASSEMBLY



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Sounds good, Charlie, but . . .

Prove it for yourself, Mr. Maxwell. Try a small order of Safetex and then ask Shipping what they think of it.

Well, I guess we could do that.

Shall I put you down for 5 cases or 10, Mr. Maxwell?

You can't accurately determine gummed tape costs by purchase price alone. Application costs are equally important. Try a small order and then ask your Shipping Department foreman—he'll tell you there's a difference in Safetex that pays off.

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ing procedures to follow to get acceptable quality in the future.

When defects show up: Still another angle of quality which enters the picture could be an adverse condition showing up in a part of a lot during the time the container parts are actually being processed through our equipment. Here the advantages of having more than one supplier for a given component enter the picture; comparisons become possible. Similar situations arise where the same container part is manufactured in different runs by the same supplier.

In any event, some decision must be made on the spot in order to keep production functioning. This emphasizes that a thorough knowledge of the idiosyncrasies of each container can give a big assist in making such a quality decision.

Correcting The Trouble

In some instances it may have been determined that a given lot of parts have a borderline fit. However, these parts may be perfect in every other way and could be used provided additional help were used to give an assist where the flow of work on the packaging line is slowed up due to this irregularity of the part. Here a knowledge of the supplier and a fairly close estimate of the value of the lot in question may bring a decision to use the parts in question—operating with extra help. If the decision is to charge the extra labor to the supplier, this is at once confirmed by letter.

Know suppliers' codes. Another example could be where a threading device becomes loosened and out of adjustment during the processing of an order. A knowledge of the supplier's code of carton identification can determine the extent of cartons used on the particular shift. As a result, sufficient cartons of parts can be set aside even beyond the point where we are certain the trouble has been corrected. Here, depending on the quantity or value involved, the supplier may elect to have the parts returned for sorting. If so, the parts are billed back and such parts as are salvaged by the supplier will be returned to us.

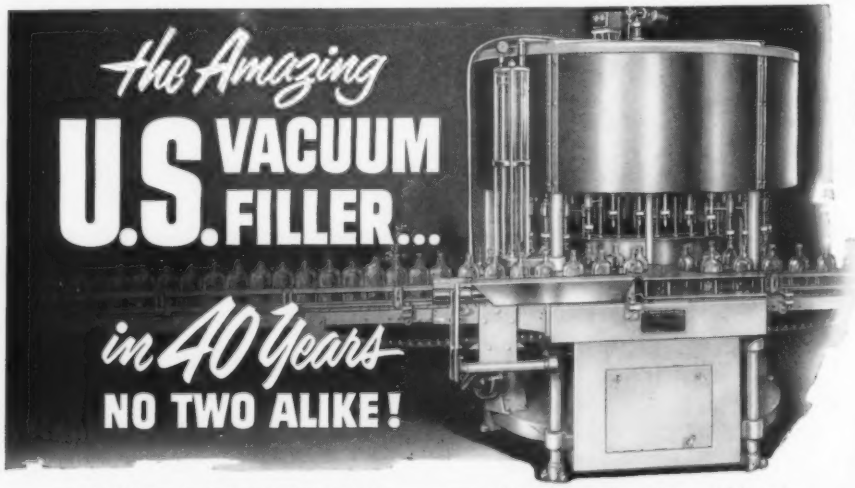
In any such instances we have found suppliers more than cooperative.

Another phase of the supplier follow-up, not regarding use of the current inventory but rather as an important factor in the production of repeat orders for the same parts, is the knowledge acquired as to their functioning. This is passed along in an effort to correct defects or make improvement and so avoid future difficulty.

D. Historical Files

A few representative specimens, selected from the samples taken, are held for reference. Experience has proven that such samples should be kept for three years. During this period we must usually make some reference to them. It is important than an area of sufficient size be allocated as a storage room for the accumulated samples; also there should be facilities for locking up the area.

The envelopes holding the con-



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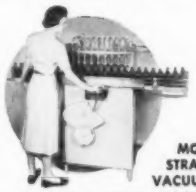

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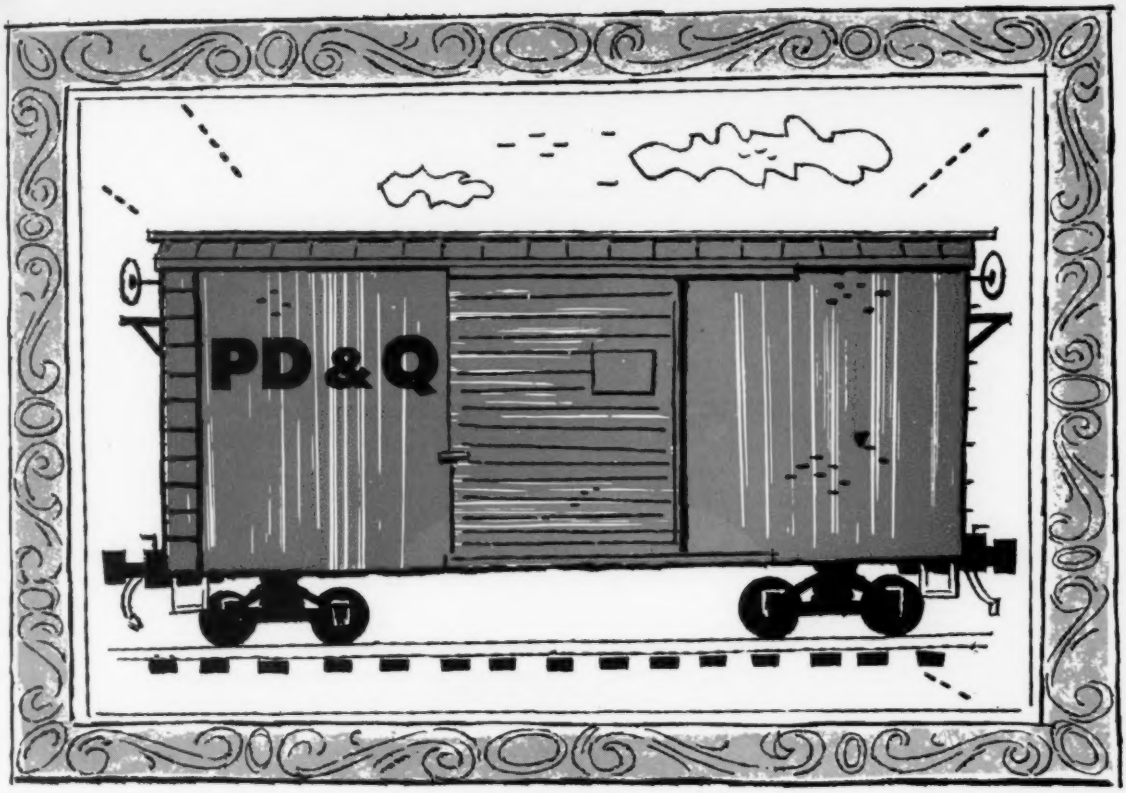

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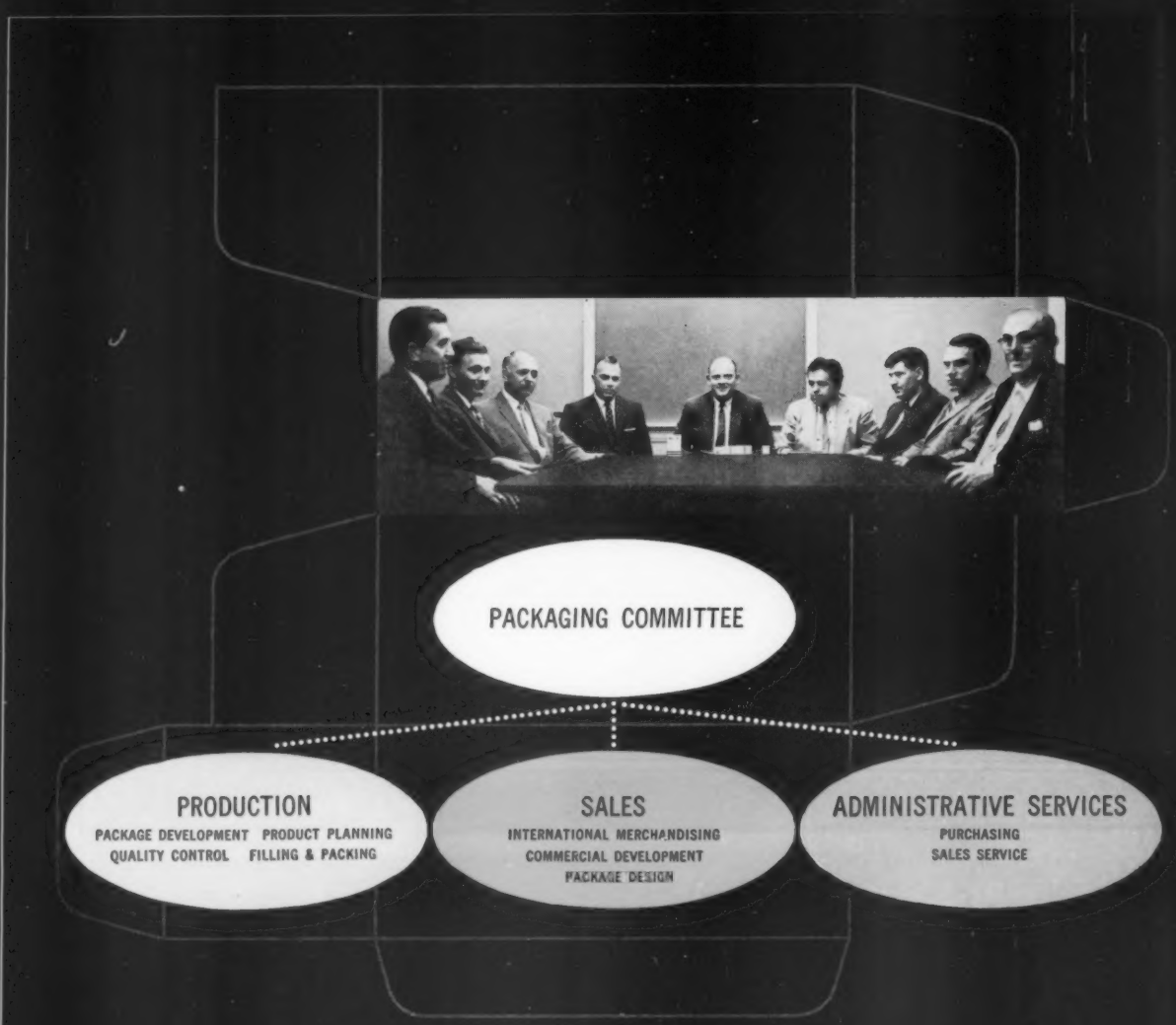

PACKAGING COMMITTEE AT LEDERLE

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With ethical drugs, there's no margin for error—either in product or package. At Lederle Laboratories Division, American Cyanamid Company, where "packaging" means specifying, buying and handling millions of containers every month, this nine-man committee has authority in a particularly complex area.

Lederle uses thousands of different types and sizes of containers, creating special problems of inventory, package engineering, mechanization, quality control and delivery. It is vital, the Committee recognizes, to work with suppliers who are dependable, knowledgeable, and specialists in their field.

Federal, one of the four largest makers of folding boxes, has been a Lederle supplier for many years. Perhaps our kind of experience can be an asset to your packaging committee also.

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OPERATING 16 PAPERBOARD MILLS AND FOLDING BOX PLANTS

tainer samples should have on them comments regarding the lot involved. Particularly this might include borderline ink match; finish conditions about which the supplier had been notified; samples passed, including particular reference to the original control, and such details as the direction in which this lot is borderline. A check-up on future orders should be made and the calendar noted so that when the next lot is received a further comparison can be made to determine if improvement is sufficient to bring the match back to control.

Information proves helpful. Again, there may have been a change in decoration, copy, or the like. Having such information appear on the sample envelope may eliminate a future search through files to answer a question. There are many other ways in which information as to conditions found in a given lot may be pertinent to future procedure. In quality control operation one never has too much information about any one item.

For this historical record, corrugated open top boxes were designed which are the width of the sample envelopes while the length is controlled by the cabinet shelf. Such trays afford easy access to any particular lot in question.

In addition to the above, a series of looseleaf books should be procured. Into these would be placed one sample showing each change in a part. This results in a progressive historical file for each container part involved in the complete line of products.

Building A System

Quality control or more probably the establishment of a quality control system isn't something that grows over night like Topsy; it must be gradually developed with a vast amount of background preparation before it functions effectively as a system.

Our company is firmly convinced of the value of such a system. We are getting into the more technical phases of statistical quality control. I think we were aware of the problems and approaches even before the term "quality control" became such a byword in business and industry.

Need people, equipment. Obviously, statistical quality control brings into the picture not only all of the general information and knowledge but also detailed and specific facts concerning all measurements, tolerances, and acceptability and the like. But we should warn those getting into it that such a forward step requires increased personnel, people trained in testing, instrument reading, as well as those trained individuals whom we frequently find in research and similar departments.

Even so, as we have noted above, the fact remains that a start must take place somewhere. We have found that the simple and practical approaches outlined in this article are most helpful in launching a program and as groundwork for a more complex program of full-scale statistical quality control. *(End)*

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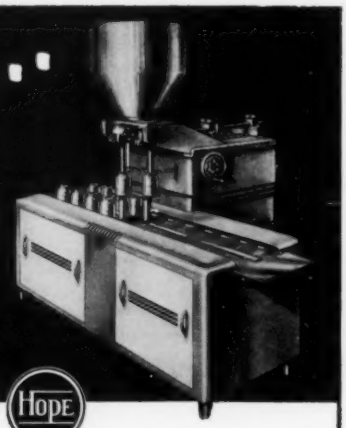

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William R. Fieroh has been associated with I. J. Grass Noodle Company for 18 years. Prior to that, for 13 years, he was with Triangle Package Machinery Company on installation and "road" work. His engineering and operational training is largely the result of experience and machine shop work. During his years in his present capacity, he has been responsible for a number of packaging machinery developments.

Typical packaging line problems with prefabricated film bags

By William R. Fieroh,
Superintendent,
I. J. Grass Noodle Company,
Chicago

Packaging line use of prefabricated polyethylene and cellophane bags poses some special problems. The nature of the material, plus variances in the manufacturing and converting processes give rise to slow-down factors on the packaging line. Mr. Fieroh's discussion of filling techniques, handling slippery bags, suspending bags for easy movement, and heat sealing and conveying them offers practical solutions to common difficulties. Timely application of this useful know-how should contribute to higher speeds and fewer interruptions on bag filling lines.

If you are to get the most out of your prefabricated film bags, you have to know quite a bit about your materials. There are many things you can do to speed up your production line operations with these bags. Or, putting it another way, you will slow down your operation if you don't capitalize on the shortcuts these techniques offer. While most of our discussion here focuses on polyethylene, it is also applicable to cellophane, because we get practically the same problems with cellophane as with polyethylene.

While we are glad to see the texture of polyethylene improving, it still offers a source of difficulty. We realize its manufacturers and converters have many problems which they are diligently seeking to solve. In fact, they have been making progress right along. But if you know how to recognize these difficulties, you can be alert to them on your lines.

Rigidity is helpful. For example, a two-mil polyethylene that is theoretically uniform actually varies in texture from limp to slightly rigid. We find we get a more uniform filling and discharge operation if a bag tends to be slightly on the rigid side. As a result, it is stiffer, which means its resin texture is more stiff than it is flexible. But whether you speak of it as a slightly rigid texture or a slightly harder texture, the fact is we have better control over it on our packaging lines than with bags tending to be more limp.

New Bag Holders Needed

Until we installed specially developed bag holders, we had difficulty holding polyethylene bags for the fill to take place. Because of the stretch and slip in the polyethylene itself, the bags proved hard to hold. In the course of a fill, as soon as the product hit the polyethylene, the bag stretched, thus elongating itself. Also, it had a tendency to tear or wrinkle on the gripping bar holding it in place for the fill. This gave trouble at the time or point of release. These wrinkles were folding over at the point of holding. Also, the material was locking itself on the holding mechanism and not releasing as it should. From this point it either fell off or had to be taken manually from the mechanism.

(Turn Page)

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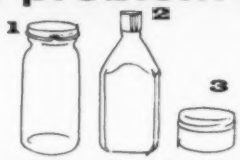

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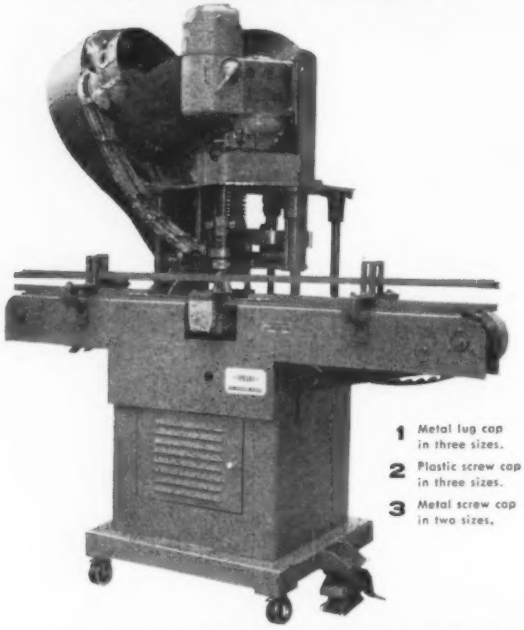

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Use two-pronged holder. This was slowing down our production rates and causing us some loss of material. We found a solution in the form of a different type of bag holder. This is a two-station or two-point holder covering a wider area (reaching over nearly one-fourth of the bag's area) and using rubber-covered grips. The holder is like a wishbone and each of its two prongs has a ball-like rubber grip that presses against the bag, holding it.

We found these holders reduced the strain at the point of holding and helped us to get a freer discharge of the bag after the filling and weighing took place. Since the rubber holders are about 2-in. apart, the holder in effect reduces the wrinkling of the bag. Also, it avoids having any metal push into the bag. Before getting these holders, we were having trouble with metal bag holders breaking the bag material.

We find such a holder quite effective. We use the same kind for cellophane bags as for polyethylene bags. The basic objective is to cover as much of the bag area as possible. The fork jaw thus overcomes our previous difficulty in holding a bag.

Use Of Wet Fingers

The smooth and slippery texture of polyethylene gave us a problem in the handling of bags at the point of fill. We had to provide a way of letting each operator moisten her finger in order to take and open each bag. Each girl must get the bag open in sufficiently rapid time to keep up with our production rates. We found the girls couldn't keep up if we didn't provide them a means of moistening their fingers.

Moisture caused seal failure. However, doing this introduced another problem. In the course of tracing down defective seals, we found we were having seal failures at the very points where the moistened fingers of the girls touched the inner surfaces of the bags. In the course of positioning

each bag, a girl must get a finger or thumb inside the bag. Being moistened (for the bag opening process), the result is a wet area at the point of contact. Incidentally, we use mineral oil as well as water for the moistening agent. Just as with water, we found that if an operator had an excess of oil on her finger (the one going inside the bag), there was difficulty in getting a good heat seal. The trouble was due to the effect of water or oil on the heat seal texture of the film.

Less Moisture, Lower Seals

We solved this problem by getting our girls to use the sponges as little as possible and by learning to do the job with minimum moisture. At the same time, obviously, if they didn't moisten their fingers enough, they couldn't handle the bags with sufficient speed to keep up with production. We taught our girls to hold each bag as close to its top as possible. So, they learned to avoid getting their wet fingers any deeper than necessary on the inside of a bag. Also, we set our equipment to make the heat seal as far below the top of a bag as possible. Our current practices call for a heat seal three-fourths of an inch from the bag top.

Seals low, fingers high. By moving the seal down and by training the girls to hold the bags as close to the tops as possible (as well as to minimize moisture usage), we ended the trouble. Teaching the girls to use a minimum amount of moisture was a big help because they have to dampen their fingers so frequently. They do it for virtually every other bag handled. Experimentation with having them do it every third, fourth, or fifth bag disclosed not enough moisture. Wetting their fingers before handling every other bag does the trick—provided they use as little moisture as possible, thus assuring adequate heat seals.

Problems Of Limp Bags

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AUGUST
1958

Plastiatrics in packaging

DOW'S CLINICAL APPROACH TO HEALTHY PLASTICS APPLICATION

DOW

STUDY SHOWS IMPORTANCE OF WEIGHING VARIABLES IN FABRICATION METHODS BEFORE PACKAGE IS DESIGNED

ENGINEER CAN ALTER MATERIAL PROPERTIES BY CHANGING METHOD OF FABRICATION

Recently completed studies at Dow have shed new light on plastic package fabrication techniques that can help the package engineer in developing suitable package designs.

Injection molding and extrusion forming, two practical methods of fabricating thermoplastics for packaging applications, were selected for this study.

The wise package engineer will consider both techniques when planning a new package design, because each offers inherent advantages. Injection molding, the more familiar process, allows greater overall design flexibility. Greater control in variation of section thickness can be obtained, and structural aids, such as ribs or bosses, can be easily obtained while retaining a flush inside surface.

On the other hand, if a thin wall container will do the job best, extrusion forming may offer more possibilities. Sheet extrusion and vacuum forming are often combined into one operation, which usually produces formed parts with lower stress levels than in thin molded parts. This means that a formed part may be thinner yet more rugged than a molded part, and there may be an advantage of economy in production.

When economy is the prime consideration, the Dow study shows that container wall thickness will often determine the selection of fabrication technique. Where section thickness is .040" or greater (Figure 1), and important factors such as design are equal, pounds of parts per dollar investment are practically equal.

However, where thinner wall sections are involved (Figure 2), pounds of parts per dollar investment tend to be greater with extrusion forming.

It is important to evaluate other factors before selecting the method of fabricating thermoplastic packages. Surface finish, gloss, and dimensional accuracy, to mention a few, will likely have a bearing on the particular job at hand.

Detailed information on this study is now available. In addition, Plastics Technical Service maintains a complete library of technical information on all phases of plastics packaging application. Direct your specific requests to THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Packaging Service 1562N.

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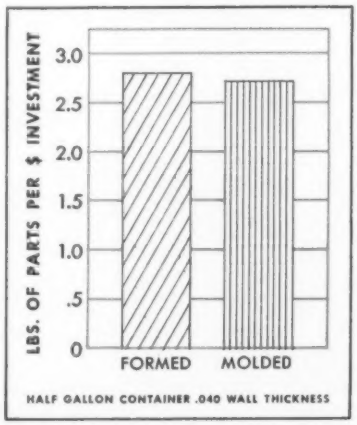
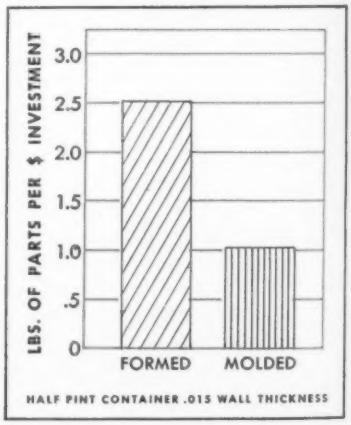


HALF GALLON CONTAINER .040 WALL THICKNESS



HALF PINT CONTAINER .015 WALL THICKNESS

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ethylene, limp bags are hard to handle on the heat sealing equipment. Further, if the polyethylene bag is elongated too far, it folds over or drops over, thus making it difficult to seal. Variations in material texture are somewhat critical because of the difficulty of controlling heat seals in the face of such variations. We are glad to see continuing improvement in the control of polyethylene texture. As a result, there is now not too great a variance of the heat sealing temperatures necessary to get a suitably sealed package.

Watch sealing closely. Unless the heat sealing is adequately controlled, either you are getting a thoroughly tight seal, or you have one that is just barely suitable to permit letting the package go into shipment—without risk of having it leak. We hope the improvement in film variation control continues, thus contributing to improved packaging line performance.

We all are trying to close further the gap on quality control. We know that the unavoidable manufacturing and converting differences and variations of the resin texture are the problem factors. As a result, we have to compensate for these variations in the filling and heat sealing operations. This is so regardless of which filling machinery we are using and which heat sealing unit we have.

Effect Of Belt Speeds

In getting heat seals, for example, we find that the textures of slightly stiffer or rigid types of polyethylene permit a more uniform operation. They give us less wrinkling during the heat seal. Limp bags, on the other hand, tend to roll back. Also, there is interference or drag by the bags as they go through the heat sealing mechanism. Reduced to simplest terms, bags sealed under such circumstances have defective heat seals and tend to be leakers.

Keep bags in suspension. We found a way of overcoming this: When using bags of the limper material, we try to hold each bag more or less in suspension. As a result, the girl at the heat sealer raises such bags just above the belt so that each is practically suspended in mid-air as it moves through the heat sealing equipment.

For larger capacity bags, we had to solve the problem in a different way. The heavier bags cannot go through in such a hanging method. To avoid heat sealing difficulties with these bags, we provide variable speeds in our conveying system. We either slow down or step up the conveyor belt speed. Since the heavier bags tend to drag, we have speeded up the conveyor belt on which they ride. On the other hand, we find it necessary to slow down the belt speed when carrying bags of the lighter or medium weights of material.

Basically this is a problem of friction. Any slowing down or slip of the heavier type bag represents a conveying difficulty. We must coordinate the belt speed of the heat

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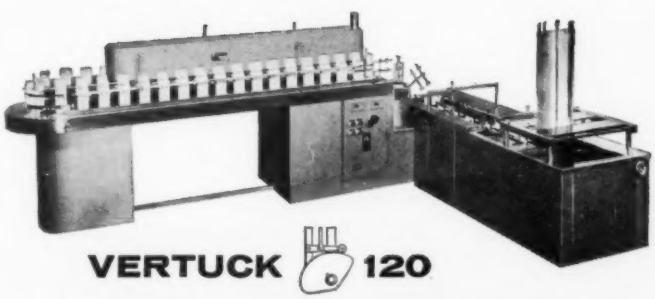

VERTUCK 120

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Equipment gives you
Performance Plus . . .
plus ARENCO SERVICE

The Arenco Machine Company of New York is proud of the outstanding performance of its filling and capping machines—proud, too, of the service it provides to assure prompt delivery, accurate installation and perfect performance.

Typical Arenco personalized service is the experience of Riker Laboratories in Los Angeles. Riker urgently needed an Arenco capping machine to implement production. To meet Riker time requirements Arenco delivered the equipment by air, non-stop from Denmark across the North Pole to Riker Laboratories in Los Angeles!

The unit "was delivered as scheduled", said a Riker Laboratories spokesman, "with a minimum of effort on our part, and we are most grateful to the Arenco Machine Company for their splendid cooperation in this matter."

GAB Automatic Tube Filling and Closing Machine

GAC Semi-Automatic Jar Filling Machine

The Arenco Machine Company has long been known by its customers for the outstanding performance of its quality machines and the personalized, interested, follow-through service it makes available to them.

VUV Bulk Materials Packager

Capsolut Vial Capping and Sealing Machine

If this is the kind of machinery—and service—your company demands, write today to

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Manufacturers of filling, capping, sealing and packing machines.

sealer with that of the main conveyor itself. Making the conveyor run faster than the heat sealer belts seems to be satisfactory in the case of heavier bags which we cannot suspend as we do the lighter ones.

Belt Cleats Cut Slip

Incidentally, we ran into a problem with the inclined conveying of polyethylene bags. They have a tendency to slide back even at an incline of just 30°. We found we could solve this problem by using a cleated belt. We now have a 3/16-in. rise in the form of belt cleats that assures the belt picking up and holding the bags.

Try different combinations. We tried several grades of rubber, Neoprene, and cotton belting. None had sufficient gripping to hold polyethylene bags. (Incidentally, this particular difficulty did not arise with our cellophane bags. We suggest that anyone having a similar problem be sure to try the different belts and conveyor possibilities. Probably the low-cleated belt will prove most satisfactory. Either a plant can cleat its own belts or have its belt supplier furnish them already cleated.

Releasing Excess Air

In the process of filling and heat sealing these fabricated bags, a certain amount of air gets locked into each bag. This presented us a packing problem. The trapped air in the bag made it difficult to pack them into shipping cases. Experimentation led us to the use of tiny airholes in bags.

Effect of small holes. Now we simply take a stack of bags and use a pointed punch (like an ice pick or small awl) and simply punch the stack. Although the holes are no larger than pinholes, they permit enough of the air to escape. This escaping takes place between the time of the heat seal and the packing of finished bags into cases.

In this particular case, we are packaging dry noodles in the bags. The airhole is a satisfactory solution. If we had a fine sifting or liquid product, the airhole would not do. In such a case, one approach might be to allow sufficient headspace within each bag (after filling). Another possibility would be to enlarge the size of each shipping case. As a general practice, we avoid shipping out packages that contain excess amounts of air.

How Bags Get Welded

Some of our problems led us to the bag manufacturing and converting process. At one time our operators were having difficulty opening bags. Frequently two bags or a series or pairs of bags would be slightly secured—held to each other by a bead-like weld at the cut edge. Tracking this one down, we found that bag manufacturers were using a shear cut instead of a straight blade. Using a shear-edged knife hour after hour in the course of a run was resulting in considerable heat being generated. We found this was subjecting the polyethylene to enough heat with our bags to cause the slight weld on the cut edges of two bags. This noticeably slowed down the opening process as our operators had to break these bags apart.

Prevent heat concentration. This stresses the importance of having

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some kind of cooling action for the cutting blade. Likewise, another suggestion is use of a serrated cutter in the bag producing process in order to avoid having square edges.

We know that many package-using plants employ dusting or the use of starches to facilitate bag opening. Our objection to this is that the use of these materials makes our operators' hands slip. This in turn makes it difficult for them to handle bags in any quantities and at sustained production speeds. Our opinion is that the real answer to the problem is to have a correctly controlled bag cutting operation.

Check Material Itself

Sometimes solving a problem involves both the converter and the supplier of basic materials as well as the user himself. In one instance, we could not get a certain batch of bags to seal. Acknowledging that our sealing equipment might be at fault, we let our converter furnish us a sealer (of commercial manufacture) different than our own. The bags still wouldn't seal. Experimentation following unsuccessful use of a third type of sealer disclosed that the material was, in effect, all off of texture in manufacturing. Because of this, the material could not heat seal. These errors might seem too obvious to escape detection, but they do show up from time to time in the course of a packaging line operation. Even our own experimentation (including use of a double-roll seal) failed to disclose the difficulty. It all stresses the importance of working closely with your suppliers.

Act promptly on trouble. Hand in hand with this goes the importance of tackling any difficulties promptly. Our practice is to hit these problems as soon as they come up. We simply do not allow them to accumulate or grow. To do so would result in cumulatively large losses of material, along with greatly reduced production—due to delays and stoppages on the packaging lines. *(End)*

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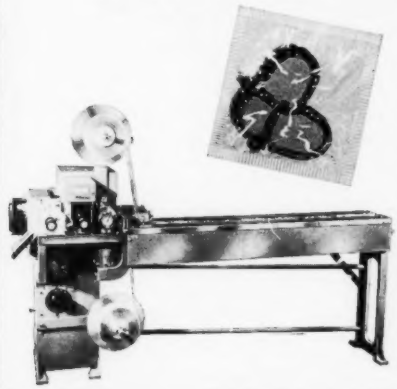

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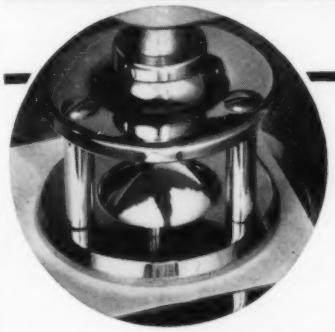

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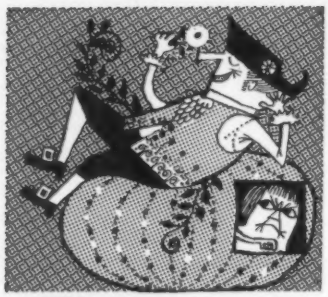

WHEN Peter, the pumpkin-eater, started having troubles with his wife he put her in a pumpkin shell. Evidently he'd had a little experience with this sort of thing. He *knew* how to contain her.

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Modern packaging engineers pre-test designs with IMPACT-O-GRAPH. It reveals what shocks the container must withstand during normal shipping operations and when, where or if any damaging situations occur.

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Western packaging show to be held August 11-13 will be record-breaker

Sponsors of the forthcoming 7th Western Packaging and Materials Handling Exposition expect some 10,000 management, scientific, technical, and production executives and specialists to attend. When these show visitors reach San Francisco's Civic Auditorium, site of the record-breaking West Coast show, they will find over 150 exhibitors on hand. Special feature: A clinic on packaging problems.

The 1958 Western Packaging and Materials Handling Exposition will occupy the Civic Auditorium in San Francisco August 11-13. More than 150 exhibitors will be there to serve the 10,000 visitors expected.

Special feature of this biennial show is a problem clinic to be held on August 12th. Sponsored by the Western Packaging Association, the clinic will have a panel of qualified packaging experts. Problems for presentation at this clinic are being solicited in advance. Clinic moderator will be William Jaenicke, Western packaging consultant. The clinic convenes at 10:00 a.m., Tuesday, August 12th.

Hours of the exposition are: Monday, August 11th—1:00 p.m. to 5:30 p.m.; Tuesday, August 12th—1:00 p.m. to 9:30 p.m.; Wednesday, August 13th—1:00 p.m. to 5:30 p.m.

Point of interest: The mayor of San Francisco has officially proclaimed the week "Packaging and Materials Handling Week." In addition to the Western Packaging Association, the Materials Handling Association of Northern California and the Society of Industrial Packaging and Materials Handling Engineers also are participating. The latter groups are inaugurating the first annual golf tournament and dinner at the Peninsula Golf and Country Club, Friday, August 15th. They extend an open invitation to all registrants at the Western Packaging and Materials Handling Exposition.

Visitors may obtain advance rapid registration tickets from Clapp & Poliak, Inc., the firm managing the exposition. These are available from Clapp & Poliak's Western office at 759 Monadnock Building, San Francisco 5. This office is accepting telephone requests for tickets: Its number is Douglas 2-7876. There is no registration fee for the exposition.

The Western show is now held every other year and alternates between San Francisco and Los Angeles. Sponsors of the show say there is a greater diversity among exhibitors than in former years. They also report intensified competition in bringing out more new items than in former shows. Many exhibitors are not telling in advance just what they plan to exhibit, and will introduce these items at their booths on opening day.

change from 8 oz. to 2 lb. containers in

15 MINUTES OR LESS

WITH THE NEW

GEYER "SL-58" FILLER

Less than 15 minutes now separate any two runs when you use the GEYER SL-58 filler; in fact, adjacent sizes can be changed over by merely turning a small hand wheel. This time element is particularly important where there are many short runs and many change-overs . . . thus affording cumulative savings of hours or even days of production time each week. In the new, simplified design, the spring lift rising table is set to the correct height for various containers by merely turning an adjusting screw while the "No Jar—No Fill" device requires no adjustment at all.

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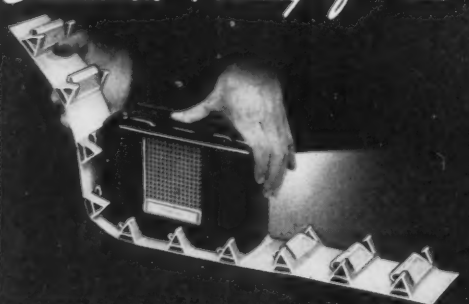

SUS-RAP is produced in widths, slot sizes, and various strength qualities to ECONOMICALLY package YOUR product . . .

Exclusive VERTICAL-HORIZONTAL suspension safeguards your product both in and out of its shipping carton.

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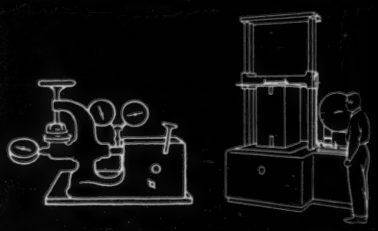
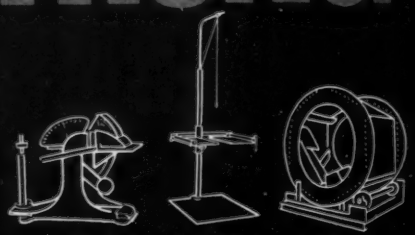
HOW STRONG IS STRONG 2





Don't buy or sell boxes, cartons or any shipping containers unless they are tested for strength by a TMI package tester.

This will avoid any loss of your time or money and will assure you that your product arrives in perfect condition.

TMI, well-known for testing instruments, carries a complete line of testers such as: Compression, Vibration, Revolving Drum, Conbur, Puncture, Drop and all other testers for component parts. These instruments are reasonably priced, highly accurate, easy to operate and cost little to maintain. *All technical specifications are met.*

Write today for our PACKAGE TESTING Catalog and find out how your package can be made to "take it."

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Announcements of machinery and products

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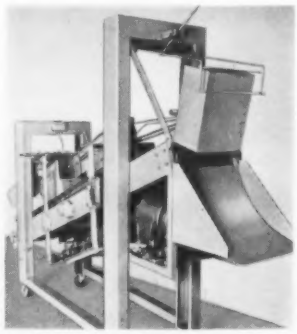
Smooth Foil Containers

Ekco-Alcoa Containers Inc. announces development of a new smooth foil container. This container features completely smooth walls and rims—no corrugations. There are two basic types available, including a casserole in sizes up to 12 fl. oz. and unit containers in 1-1/2 to 2 oz. sizes. Several styles of rims and closures are available, the most practical being a heat sealed foil cover over a flat rim with a convenient pull tab for easy opening. Protective vinyl coating can be used to increase product protection. Circle No. 1.

Portable Case Sealer

Standard Metal Products Co. has designed a portable case sealer that turns filled cases upside down to let the weight of each case compress its glued top as it is transported on conveyors or stored on pallets. Completely portable, this case sealer rolls on heavy duty casters from one case loading operation to another. Handles a wide range of case sizes up to 16″ wide, 20″ long, and 12″ high. The unit is 3′ wide, 9′ long.



It weighs approx. 800 lbs. In operation, the filled cases are delivered to the sealer on a conveyor; the cases move up incline on non-slip corrugated grip-top belt. The flaps are automatically tucked in and skip-glued; then the top flaps are folded down onto glued surfaces. As the case reaches the top of the incline, it is turned upside down onto a slide which delivers it to pallet or conveyor. Circle No. 2.

Dial Micrometer

E. J. Cady & Co. has developed the Cady 10000 Micrometer. This instrument is used for checking or comparing thicknesses where

exact readings are necessary. It is graduated in 1/10 of 1/1000-in., with a thickness capacity of 50/1000-in. This micrometer is especially designed for use in measuring such materials as cellophane, polyethylene, laminates, papers, foils, tissues, etc. It consists of a cast base with 4-in. throat. The anvil shaft is coil-spring loaded with compensation for uniform pressure from the 9/16-in. dia. anvil. The anvil is raised by a lever for insertion of material to be calipered, and incorporates an adjusting gear for re-setting indicator blade on dial to exact zero when required. Pressure psi meets ASTM and TAPPI standards. Circle No. 3.

Poly Bags For Industry

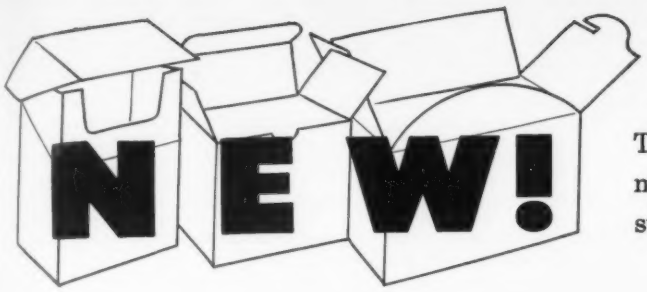
Monsanto Chemical Co. announces industrial shipping bags fabricated from 10-mil polyethylene film are now available from Chippewa Plastics, Inc. These bags conform to the specifications established by the Railroad Joint Classification Committee, which call for bags made of virgin, extrusion-grade polyethylene resin. The bags also must be heat sealed so that no part of the seal has a tensile strength of less than 1,800 psi at 23° C. or has a stretch of less than 350%, including the seal area. Bags can hold weights up to 50 lbs. Circle No. 4.

Multiwall Bag Printer

Industrial Marking Equipment Co. has designed an automatic machine for in-plant imprinting multiwall bags. Claimed to eliminate preprinting, the unit feeds and prints up to 20 multiwall bags/min. The feeding mechanism is vacuum pump operated and the magazine holds 250 to 300 bags at one time. The printer is intended for use with production line filling equipment. It can be operated intermittently as well as automatically and continuously. Inking is through felt rollers, internal ink reservoir, and rubber transfer roller; interchangeable base lock rubber type is used. The unit can be produced to fit a single bag size or made adjustable for moderate variation in bag sizes. Circle No. 5.

Elevator Hopper

U. S. Engineering Co. announces an addition to its line of parts feeders, an elevator hopper that combines a large storage capacity with a high-speed, flexible parts-feeder to feed and orient a large variety of parts. The unit consists of a storage hopper (6 cu. ft. or more capacity) which has its loading opening approx. 3 ft.



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AUTOMATIC GLASS UNLOADER AND UNSCRAMBLER

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• Self-timed by the cartons themselves with vacuum opening the flaps, lifting and depositing glass containers onto the STYL-O-MATIC Walkie-Pushie Unscrambler where they are discharged in single line to filler. Completely adjustable for most standard sizes in 5 minutes.

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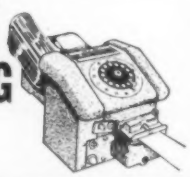

Tape that overlaps end of carton more than 3" is wasted.

Stop this waste . . . get a Marsh. Dial desired length—out comes moistened ready-to-use tape, cut to fit the carton. You save up to 1 tape roll in 5.

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above floor level for easy loading. A cleated belt running through the hopper picks up and partially orients the product, then carries the product to a higher elevation where it is discharged down a track and oriented, with excess parts or rejects going back to the hopper. Though production rates will depend on size and shape of the product, it has been estimated that speeds in excess of 1,000 parts/min. can be obtained for smaller parts. Circle No. 6.

Case Packer

A-B-C Packaging Machine Corp. has a new semi-automatic carton packer adjustable to a wide range of rectangular cartons and can sizes. It is also adjustable to a variety of packing arrangements and case sizes. Cartons are received in single or multiple lanes and are collected into the required pattern. The operator opens a case, places it on the horn of the packer, and the case is automatically packed. Switches control the cartons throughout the collecting and packing operation, thus preventing any damage to cartons or the possibility of an incompletely-packed case. Circle No. 7.

Fibre Shipping Container

The Grief Bros. Cooperage Corp. announces the Ro-Con fibre drum, a fibre shipping container wound to a square pattern with rounded corners and convex sides. Because of its shape, the new drum provides approx. 25% greater cubic capacity per unit of space occupied in shipping or storage than does the round drum. The Ro-Con drum is constructed to conform to all important official shipping specifications. Circle No. 8.

Coating/Drying/Scoring Unit

Abbott Plastic Machine Corp. has designed a coating, drying, and scoring unit, known as the CDS, for in-plant processing of cardboard stock for use in skin packaging. In operation, the cardboard sheets are hand-fed, right side up into the coating machine, where liquid adhesive is automatically applied and smoothed over the cardboard surface; the sheets then move to the conveyor belt and pass beneath two special quartz infra-red heaters during a 30-foot ride, assuring dried sheets by the time they reach the end of the conveyor. These sheets can be hand-fed into the scoring unit cylinder where 400 circular blades score the surface of the dried adhesive to allow passage of air through the cardboard during the vacuum process of skin packaging. The three machines work as one unit, or are available separately. Circle No. 9.

Clinched Ears For Paint Cans

American Can Co. has developed one-gallon paint cans with solderless clinched ears. This addition to its "ColorGuard" paint can line is guaranteed to be "carry-safe." Under the new method of construction, the ears are clinched into the body by a process of "bumping" a body fold over the ear flange. In a national emergency, the handle construction is particularly suited for use with blackplate (untinned steel) because no tin or solder is needed. Circle No. 10.

Capping Equipment

Arenco Machine Co. announces the Capsolut capping machine. Operated by compressed air, the cap seating and sealing mechanism is controlled by a foot treadle, permitting the operator to use both hands for loading. Two easily adjusted valves determine and maintain pressure required for sealing, which corresponds to the strength and resistance of the capping material. This ranges from 35 to 42 lbs. psi for 20 mm caps, up to 71 to 100 psi for larger and heavier caps. The machine handles vials, aerosols, and other containers in heights from 40 mm to 240 mm, and diameters from 8 mm to 100 mm. Circle No. 11.

Electronic Heat Sealer

Sealomatic Electronics Corp. has developed a dual unit, Model 6000-SB60, designed to meet the requirements of plants with production demands subject to considerable fluctuation. The Sealomatic Dual involves only one generator and two presses, but at periods of peak production demand, it can be operated as two units, sealing alternately. The machine features a safety control control that does not permit both presses to seal at the same time. Circle No. 12.

Portable Filler

National Instrument Co. has a new Filamatic filler model that can be attached to any standard geneva drive conveyor to provide completely automatic liquid filling. Known as Type DABC, the new Filamatic is available in a variety of models to provide filling speeds up to 120/min., in volume ranges from 1 dram to 16 oz. The filling cycle is initiated by a cable-connected Micro switch, which plugs into a mating outlet on the unit. A preset volume of liquid is dispensed each time an empty container actuates the Micro switch. Circle No. 13.

Industry literature available free

1. Beneath each announcement is a code number. As you select items on which you want more information, *note* this number.
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Strapping Tape

Johns Manville, Dutch Brand Div., has an eight-page brochure, No. 7452, describing its pressure sensitive reinforced vinyl tape No. 400. Performance specifications are given and suggested uses are illustrated for reinforcing, bundling, unitizing, tear stripping, etc. Circle No. **101.**

Semi-Automatic Drum Filler

The Rucker Co. has a data sheet on its machine to fill drums of from 5 to 55 gal. capacity. Fills to either net or gross weight. Used in petroleum, chemical, food, paint, and varnish industries, it is adaptable to any liquid product. Maximum filling rate is 125 gal/min. without foaming. Circle No. **102.**

Net Weight Scales

Hayssen Mfg. Co. has an illustrated brochure on its automatic net weight scales for filling bags, cartons, cans, jars, etc. Available in 2, 3, 4, 5, and 6 scale units, depending on production requirements, it is adjustable in increments of 1/64 oz. Circle No. **103.**

Military Packaging

The D. C. Cooper Co. has prepared a comprehensive binder illustrating and giving specifications of recommended equipment to be used for preservation and packaging under military spec MIL-P-116C. Described in it is equipment for various cleaning processes and application of preservatives. Circle No. **104.**

Vibrators

Martin Engineering Co. has a catalog describing its various types of vibrators. The devices are air operated and can be mounted on hoppers, chutes, screens, etc. It breaks arching and keeps the most stubborn materials moving. Circle No. **105.**

Polyethylene Edge Sealer

Amsco Packaging Machinery, Inc., has literature on its Amscomatic 100 model, a machine designed to edge seal automatically on a continuous production basis. Utilizing the principle of rotary sealing, this machine automatically conveys the bag through the machine, produces an edge seal closure, and simultaneously removes and disposes of the skirt or lip above the seal. It is capable of sealing poly bags at speeds up to 1,000 linear in./min. Polyethylene bags of thicknesses up to 6 mil gauge can be edge sealed on the Amscomatic 100. Circle No. **106.**

Cluster Packaging Machinery

Battle Creek Packaging Machines Co. offers a four-page folder on its Model 47-H wrapping machine for clustered hot dog and hamburger buns, rolls, cake, etc. It wraps with or without bottom cards, U-boards, trays at speeds up to 70/min. Condensed technical specifications are included. Circle No. **107.**

Carton/Tray Set-up Machine

FMC Packaging Machinery Div. has introduced a new carton set-up machine that is described in a current data sheet. Working with polyethylene-coated bleached sulfate board, it produces tuck lid boxes or trays at rates up to 3000/hr. Size changes can be made quickly, permitting short production runs. Boxes are made without adhesives or stay tape and are adapted for packaging fresh or frozen foods, bakery products, candy, and industrial parts. Circle No. **108.**

Volumetric Fillers

Frazier and Son offers a specification sheet that describes the operation of the Whiz-Packer volumetric filler. Available in bench models and floor models, this machine can be adapted to the filling of a variety of products such as powders, confections, seeds, noodles, etc., at variable speeds from 9 to 80 fillings/min. This machinery fills all types of containers from several grains up to 5 lbs. at accuracies to within 1/10 gram. Circle No. **109.**

Gas Sterilization

American Sterilizer Co. has published a 40-page report on "Gaseous Sterilization with Ethylene Oxide." It is intended to serve as a guide to those considering a "cold" sterilization process whereby materials of low thermostability may be rapidly and economically sterilized. This gas and its mixtures can penetrate many different wrapping materials permitting sterilization of a product after it has been packaged. Circle No. **110.**

Polyethylene-Wax Coatings

Semet-Solvay Petrochemical Div., Allied Chemical and Dye Corp., has released a technical data bulletin, "Low Molecular Weight Polyethylene-Wax Coatings for Corrugated Board." This type of polyethylene when blended with paraffin wax and applied to corrugated board improves scuff resistance, grease resistance, and release properties. This bulletin describes the characteristics of polyethylene-blended coatings, enumerating the results of numerous tests for hardness, blocking point, chemical resistance, etc., graphically demonstrating the results with charts. Circle No. **111.**

Foil-Lined Cases

Aluminum Company of America offers a four-page brochure describing the advantages of corrugated boxes that are lined with foil on the inside or outside. Such boxes provide a barrier against loss of inside moisture and control temperature rise up to 100% longer. They are adaptable for shipping fruits, vegetables, poultry, seafood, greases, bearings, chemicals, etc. Circle No. **112.**

Straight Line Fillers

International Filling Machine Corp. has published a technical data sheet describing the operating principles of the International Series No. 40 liquid fillers. Operating on the vacuum, gravity-vacuum, or straight gravity principle, these machines can fill a wide range of different size and shape bottles with products ranging from pure foods and drugs to acids. Fine fill height adjustment while the machine is running can be achieved by simple crank method. Circle No. **113.**

Bottle Labeling Machine

MRM Co. Inc., offers a four-page folder providing operating principles and specifications for the Model CM continuous motion, automatic bottle labeling machine. It handles a variety of sizes from "postage stamp" spot labels to wrap-around labels

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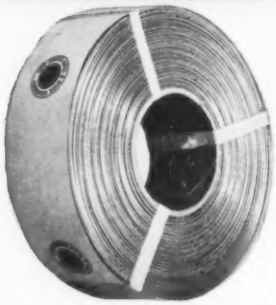

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6" x 7". This machine can be adapted to a wide range of container sizes and shapes. Circle No. **114.**

Rotary Filling Machines

Horix Mfg. Co. has published catalog No. 581 that illustrates eight different models of Horix gravity fillers for liquids and semi-liquids. These machines handle bottles and cans at high speeds with extreme accuracy of fill. Circle No. **115.**

Carton Set-Up Machine

Bivans Corp. describes its Model 50 automatic carton set-up machine in a four-page bulletin. Unit is portable and produces up to 4,000 cartons/hr. Sizes handled range from 3/8" x 7/8" x 1-1/4" to 3-1/2" x 5" x 12", with 20 min. allowed for changeover. Circle No. **116.**

Gas Sterilization

Wilmot Castle Co. offers Technical Sales Bulletin J158 describing the technique of ethylene oxide sterilization. The contents of filled pouches, boxes or bags can be sterilized by this method. Circle No. **117.**

Labeling Bags And Overwraps

Dennison Mfg. Co. offers a new bulletin describing the "Therimage" labeling process for bags and overwraps. It is the direct thermal-transfer of an ink legend to the packaging material at the packing station; it is applied automatically and instantaneously. Circle No. **118.**

Open Mouth Bag Filler

Kraft Bag Corp. is manufacturing a new automatic open mouth bag filling machine that is described in a six-page bulletin. This machine handles practically any free-flowing product and features enclosed dust-proof solenoids, a removable and adjustable filling spout, and a hinged bagging cone. Operating details are enumerated with photographs and a mechanical drawing. Circle No. **119.**

Industrial Adhesive Selection

Arabol Mfg. Co. has a folder entitled, "How to Buy Adhesives for Better Adhesion," which offers 23 points to consider when selecting an adhesive for your particular application. Circle No. **120.**

Glass Container Closures

Ball Brothers Co., Closure Div., announces a new, informative closure catalog designed to assist glass packers in the proper selection of caps for their glass packages. The multi-colored catalog is divided into six sections: Lithography and design, types and styles, metal coatings, closure liners, services, and facilities. Closure terminology, the over-all design of the cap, methods of lithography, etc. are all parts of this comprehensive closures catalog. Circle No. **121.**

Robot Label Inspector

Illumitronic Engineering offers a complete brochure on its two new models of Robot can ejectors, which feature can size changes in less than a minute. One crank adjusts can height while another adjusts the complete inspection and ejection system for proper and optimum position. The G1 and G2 "quick change" robots are ideal where one label machine is used for several size cans. The unit inspects labels on cans as they pass from the label machine. Cans with defective labels are automatically ejected. Circle No. **122.**

Bagging And Cartoning Machinery

Wright Machinery Co. manufactures a variety of packaging machines for weighing, filling, and sealing cellophane, glassine, etc. bags, as well as cartoning and weighing equipment for the food, bakery, candy, and pharmaceutical fields. It is all thoroughly described in a handsome 32-page brochure. Circle No. **123.**

Vacuumizing Attachment

Ralph Chaffee & Co. has designed a vacuumizing attachment for the Chaffee Rotor-Sealer, US 5 Star Model. Chaffee says this device makes it possible to vacuumize a package before it is fed into the heat sealing machine, and reduces expenses for this operation. Circle No. **124.**

Polyvinyl Resin Adhesives

Armour & Co. has a series of Product Information bulletins on its line of Seban polyvinyl resin adhesives. Physical and chemical properties, as well as recommended methods for using, are given for adhesives for carrying cartons, painted drum labels, carton sealing, and case sealing. Circle No. **125.**

Barrier Wrap Dispensers

Derby Sealers, Inc., has an information sheet on a line of barrier wrap dispensers for handling either adhesive or non-adhesive materials conforming with government specifications Jan. B-121. Available in sizes accommodating 6", 12" and 18" rolls, machines are equipped with slitters. Descriptions of six models and prices are included. Circle No. **126.**

Bottle And Can Packers

Standard Knapp, Div. of Emhart Mfg. Co., offers a bulletin which outlines features of the 830 packer series. These machines automatically pack filled bottles, jars, or cans into partitioned corrugated, solid fibre, or wood shipping cases. The booklet contains pictures and engineering drawings of this equipment. Circle No. **127.**

Container Feeder

U. S. Bottlers Machinery Co. has a four-page folder describing its U. S. container feeder which handles rounds, squares, panels, ovals in glass, cans, or jars. The variable speed is adjustable, permitting a speed range of from approx. 12 cycles/min. minimum to approx. 39 cycles/min. maximum. Circle No. **128.**

Odor-Free Adhesives

Morningstar-Paisley, Inc., offers laboratory reports and technical data on its new series of adhesives known as Foylam. These adhesives were especially developed for bonding aluminum foil to all types of paper

and board stocks. The odor-free characteristics of Foylam are said to allow stronger foil-paper laminations in sensitive food products where only plain metallic foil could be used previously. Foylam withstands 400°F. for 25 minutes without blistering or delamination, and will withstand freezing temperatures down to —40°F. indefinitely. Circle No. **129.**

Feeding/Filling Unit

Bemis Bro. Bag Co. has issued a two-page bulletin, No. 210, illustrating the new feeding and filling machine and Trim-Weigh scale for flour and cereals. The bulletin explains operational performance and engineering data on this bagger and weigher. High-speed packing in 2-, 5-, and 10-lb. bags is automatic. Weight tolerance-average plus or minus 2/10 oz. Circle No. **130.**

Interior Packaging

Armour & Co., Cushioning Products Div., offers an eight-page brochure telling the advantages of its interior cushioning product, Hairflex. This cushioning material may be die cut, pressed cut, or molded, or may be had in sheets, rolls, laminated parts, or in custom-made molds. The material is re-usable, highly resilient, and resistent to moisture and fungus growth. Circle No. **131.**

Web Tension Indicator

John Dusenbery Co., Inc., has a data sheet on its Model 30 web tension indicator which may be used for measuring tension in a moving or stationary web at any convenient location in any operation. The indicator consists of a pair of roll shaft supports which are load sensitive and associated electronic equipment to permit a remote reading of tension. The calibrated instrument dial continuously indicates exact total tension in a web which passes over an idler roller mounted on the load sensitive roll bearing supports. Circle No. **132.**

Dual Stapling Unit

International Staple and Machine Co. offers illustrated literature on its recently-remodeled dual stapler, which closes filled cartons from the outside at rates up to 1,000/hr. by stapling top and bottom simultaneously. In-head-valves, electric solenoids, triggers, and trigger pawls have been eliminated from the stapling heads. Individual regulators have been added to control the air pressure into the stapling heads, centering device, and advance cylinder. Circle No. **133.**

Plastic Coated Glass

Wheaton Plastics Co. has issued a colorful eight-page brochure on plastic coatings for aerosol bottles, other glass bottles or jars, and protective caps. Included, too, is a discussion on what an aerosol is and how it works. Illustrations of bottle shapes and cap styles available are included. Circle No. **134.**

Light-Scattering Photometer

American Instrument Co., Inc., has developed a light-scattering photometer which permits studies of high-molecular-weight compounds, determination of particle sizes in the micron and sub-micron ranges, and recording of haze and turbidity in moving streams of liquid. Specific applications of the instrument include measurement of droplet sizes of aerosols, measurement of minute imperfections in glass and plastic; and measurement of atmospheric impurities for control purposes. Circle No. **135.**

Stencil Roller

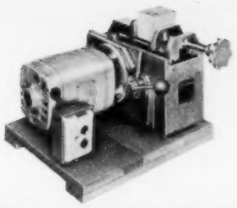
Marsh Stencil Machine Co. offers Bulletin RM-58 which describes its newly-developed Rolmark rubber roller for stencil marking addresses onto shipments. The sponge rubber roller distributes ink to the openings in the stencil by a forward and backward movement. The "open cell" surface of the rubber roller has fast pick-up of ink and large storage capacity. It may be used on cartons, wooden boxes and porous surfaces, and also on metal surfaces. Circle No. **136.**

Packaging Films

Celanese Corp. of America has a folder containing information on its many types of plastic films. Included are discussions of Fortiflex, a linear polyethylene available in bottles and jars, as well as in sheeting for formed packages of all types, including food containers; acetate film for window boxes, bags, wraps, tapes, and laminations; Fortiflex-A, a polyolefin plastic used in injection molded or blown bottles and containers; polyvinyl acetate emulsions for container coatings; and other materials. Circle No. **137.**

Liquid Packeter

Brown Filling Machine Co., Inc., offers a six-page brochure describing the BFM Liquid Packeter. Handling liquids, this machine forms,



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fills, and heat seals in one operation, using films, foils, paper, and their laminates. Unit is said to produce up to 400 packets/min. and packet sizes range up to 4-1/2" by 4-3/4". Circle No. **138.**

Packaging Consultation

Container Laboratories, Inc., has a 16-page illustrated booklet describing its consulting services, research and development, design and engineering, testing, and special studies undertaken. Illustrations show difficult or unusual packages and equipment developed and actual testing operations and methods. Circle No. **139.**

Aerosol Gassing Machine

Alpha Engineering Works, Inc., offers information on its 220 Roto-Gas machine for charging aerosol containers with nitrogen or other compressed gases. Designed especially for fast charging of containers filled with liquid or semi-liquid foods and related products, it operates at a rate of up to 120 cans/min. Circle No. **140.**

Bundling Machine

Crompton & Knowles has an illustrated data sheet listing specifications for the Model B bundler. Using cellophane, glassine, kraft paper, plastic base films, etc., this machine can bundle products for the automotive, bakery, drug, food fields, etc. Speeds range from 30 to 80 bundles/min., within a size range of 2-1/2" to 12" long and 1-1/2" to 6" wide, and 1/8" to 1-1/4" high. Automatic printing or wrapping material can be achieved with accessory equipment. Circle No. **141.**

Polyester Films

Minnesota Mining & Mfg. Co. offers a folder on its "Scotchpak" brand heat-sealable polyester films. These films may be used in squeeze tubes, boilable packages, frozen food packages, or in protective coverings, as well as in many other applications. It is said to have low water vapor permeability, low gas penetration, and is resistant to most chemicals and solvents. Properties and characteristics of the polyester films are listed in the folder. Circle No. **142.**

Small Parts Feeders

Syntron Co. offers a ten-page manual on its vibratory parts feeders. These machines provide automatic, oriented position, single line feeding of small parts to packaging machines. They handle various shaped pieces of every kind of material—metal, wood, glass, plastic, etc.—without damaging it. This book lists accessory equipment such as supply hoppers, gravity feed tracks, etc., and provides installation photos of different models. Specifications for six different models are included. Circle No. **143.**

Oxygen Purging Machine

Crown Cork & Seal Co., Inc., has just published a four-page bulletin describing a new machine innovation. The Crown 28 rotary purging machine is a compact unit that drives air from a container as it floods it with an odorless, tasteless, inert atmosphere. It can be used with all kinds of granular food products, as well as pharmaceuticals and chemicals where residual oxygen retained in the package would reduce shelf life and dissipate flavor and aroma. Operating details, a mechanical drawing, and specifications are included. Circle No. **144.**

Sideweld Pouch Machine

Conapac Corp. has introduced a new polyethylene sideweld pouch machine that is described in a current data sheet. It is an intermittent motion machine with thermostatically controlled sealing for sideseam bags with or without a lip. Standard equipment includes a counter, static eliminator, and an electric eye. It makes pouches up to 20" high and from 3" to 20" wide between the seals. Circle No. **145.**

Package And Handling Method

National Metal Edge Box Co., manufacturers of solid fibre boxes with metal stays, has a four-page promotional brochure that describes its technique of packaging, storage, handling, and inventory control. This method is particularly adapted to the packaging and handling of fragile products, industrial parts, etc. Circle No. **146.**

Small Container Filler

Hope Machine Co. is manufacturing a completely new piston-filling machine that is described in an illustrated data sheet. It fills 1/8 oz. to 2 oz. containers of glass, tin, aluminum, or paper with semi-viscous or liquid products at speeds up to 200/min. Circle No. **147.**

Instant-Drying Marking

Markem Machine Co. offers a folder explaining the advantages of the new Thermomark process using an instant-drying ink and a specially adapted marking machine. A variety of surfaces can be printed such as polyethylene, cellophane, paper bag stock, waxed carton board, etc. This process permits the marked object to be handled the moment the printing head leaves it, without danger of smudging. Fewer clean-ups are necessary with this system. Circle No. **148.**

Plastic Drum Liners, Bags/Covers

Protective Lining Corp. has a 16-page illustrated bulletin offering helpful information on the uses, types, and handling of its plastic drum and carton liners. Brochure includes charts indicating where liners may be used, what sizes to use, and various films adaptable as liners. Circle No. **149.**

Marking And Decorating Machines

Apex Machine Co. offers a four-page illustrated folder that describes a variety of manual, semi-automatic, and automatic imprinting machines. Units can print on cylindrical, spherical, wavy, or flat surfaces. Multicolor units are available. Speeds up to 10,000 pieces/hr. are obtainable. Circle No. **150.**

Box Bottomer

Bostitch announces a new box bottom stapler in a current data sheet. It staples the entire box bottom in one operation with copper finish staples. Unit handles 4,000 staples without reloading. Staple and machine specifications are included. Circle No. **151.**

PMMI revises its packaging machinery manual

The Packaging Machinery Manufacturers Institute recently published the third edition of its *Official Packaging Machinery Directory*. Arranged similarly to the previous edition, its three sections consist of 173 pages of pertinent facts — an increase in size of 27 pages. Although the type size is slightly smaller, it is easily read.

Crossed-indexed as before, this reference guide is very useful, as it enables one to locate quickly proper sources for machinery he needs. One can refer to trade name, company name, or type of packaging desired.

With the increase in number of pages plus the smaller type, a great deal more information is given than previously. This includes the addition of the phone number, cable address, and names of the executives of each machinery manufacturer. Earlier editions listed only the company name and street address.

About 60 additional trade names are listed, making a total of 149 in all. The number of manufacturers included totals about 65. A close look at the equipment manufactured by each company indicates that many are making types of packaging machines today which they did not produce a few years ago.

The book may be obtained in loose-leaf form from the Packaging Machinery Manufacturers Institute, Inc., 60 East 42nd Street, Suite 863, New York 17, New York. The price of the complete directory, including binder, is $12.50. For the contents only (without binder, for those who have the binder from the previous edition), it is $5.00.

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Permeation effects of bottle size and weight

(Continued from Page 27)

bottles to those of the 4-oz. Boston Round are shown in comparison with the conversion factors from Table 1.

Compare Factors With Ratios

These data show good general agreement between conversion factors and observed ratios for the bottles considered. Twenty of the 26 listed ratios are within 20 per cent of the calculated conversion factors; 8 of these 20 are within 5 per cent. In most instances, the observed ratio is less than the conversion factor, but there are five cases in which the observed value is higher. The greatest variances occur at the extremes of the range covered – the small bottles, 1/2- and 1-oz. sizes, and the 1-gal. bottle (115.6 gm.).

With the large bottles, the problem is probably due to the method used for determining weight loss. Laboratory balances, in general, will not handle the weight of filled bottles above 32 fl. oz. Therefore, it is necessary to rely on scales with much less accuracy to detect the weight change that occurs in a 28-day test.

Problems of deviations. The differences noted with the smaller sizes are a little more difficult to analyze. When dealing with these sizes, the slightest deviation may have a significant effect on percentage values. Such deviations are due to handling errors, minor weight losses through and around the bottle closures, or even the very slight change in the moisture content of the caps.

Conversion Factors Reliable

Although there are these few areas in which the experimental data differ from the theoretical, the major portion of the acetone test results lends strong support to the reliability of the calculated conversion factors. These figures demonstrate that the conversion factors, when applied to a variety of bottle sizes, give a reliable indication of the permeability rates which may be expected. The degree of conformity of the observed ratio to the calculated factor is quite encouraging in view of the many variables which are involved in the permeability process.

Variances affecting tests. There are differences in distribution of the plastic material in the bottle walls which may affect the observed test results. There is also the non-linear variation of permeation with thickness as reported by Pinsky, Nielsen, and Parliman *(1)*. The formula for conversion factors (Equation 1) assumes a straight-line function throughout the thickness range.

It must also be considered, in reviewing these tables, that any slight inaccuracies in the measured permeability rate of the 4-fl. oz. bottle, due to experimental error, would be reflected in the observed ratios listed for the other sizes and their relationship to the calculated factors.

Conclusions

From this work, it can be concluded that:

(1) Reliable conversion factors are available for estimating the permeation rates of products in Boston Round polyethylene bottles of 1/2-oz. to 13-gal. capacity when the rate has been determined for the 4-oz. size. A simple formula, Equation 1, is cited for calculating conversion factors for bottle sizes and weights not included in this study.

(2) Some materials which are not considered suitable for packaging in the smaller polyethylene bottles, because of permeation, may be packaged satisfactorily in the larger sizes where the permeation percentage is lower.

(3) All of these data have been based on bottles made of low-density polyethylene. An earlier article *(2)* reports on permeability properties of several other plastic materials used in the production of bottles. It is quite probable that conversion factors for other materials can be worked out as simply as with polyethylene, but additional testing is required.

(4) Additional experimental data with other permeants are desirable for further confirmation of the reliability of the calculated conversion factors.

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1. Pinsky, Nielsen, and Parliman, Shelf Life in Polyethylene, *Modern Packaging*, October, 1954.

2. Nielsen and Temple, Permeability of Plastic Bottle Materials, PACKAGE ENGINEERING, January, 1958. *(End)*

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Wrap-Ade Machine Co., Inc. 59

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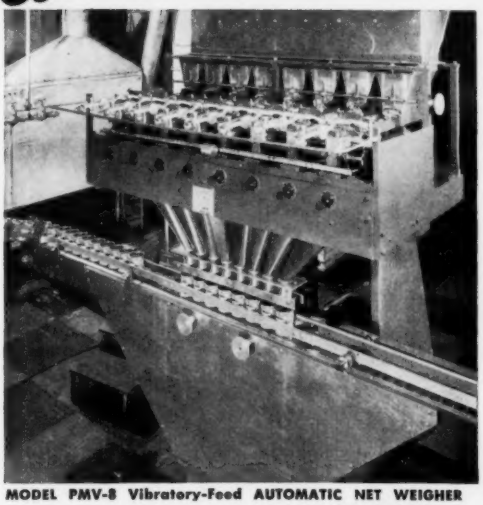

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Problems in the quality control of multiwall bags—**Donal O'Connor**

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PACKAGE engineering

185 N. Wabash Avenue • Chicago 1, Illinois

What we think

Don't neglect the people of packaging

The packaging shows and conferences of recent months and the fast-moving developments announced by individual companies suggest that our thinking emphasizes the machinery and materials of packaging. We know these are important. No company can afford to fall behind in these areas. At the same time, we think there is not enough attention to the *people* who do the packaging. We are convinced there are not enough coherent, well rounded personnel programs.

We think everyone responsible for the work of others should have and use a definite program of personnel management. It doesn't matter whether one supervises several hundred people in a multi-line plant, directs a few other laboratory researchers in some R & D group, manages a small staff packaging department, or guides the work of several girls and a mechanic or two on some individual packaging line. He has got to have a program—whether it is elaborately set forth in leatherbound manuals, recorded in pencil in a frayed notebook, or merely retained in the mind.

Recognizing the individual's needs

W. W. Tudor, personnel vice president of Sears, Roebuck and Co., recently gave The Sears World (a magazine for its executives and managers) one of the best summaries of a personnel program we have seen. It has only seven key points—but they are all-important.

(1) A chance to get ahead; (2) a chance to earn a good living; (3) reasonable security for one's self and one's family; (4) opportunity to do something worthwhile and to be recognized for this contribution; (5) information about what is going on and a voice in things affecting one; (6) working conditions that are considerate of safety and health; (7) the kind of leadership that inspires confidence.

We have read a good many pages of fine print and have sat on many an uncomfortably hard hotel ballroom chair listening to learned speakers discuss the subtleties of personnel management but few of these experts have laid out as concise and embracing *a working tool* as these seven points comprise.

Most companies look after some of these factors and a lot of them do a good job in most of the program. However, we think those on the firing line of packaging could do a much better job in giving their people information about what is going on and in letting them have a voice in affairs affecting them. Similarly, we know that there is a crying need for better leadership on the lines.

Real leaders encourage participation

Too many packaging lines and too many research operations take place in an uneasy atmosphere brought about by incompetent or inconsiderate leadership. There has to be an opportunity for workers to gain a feeling of participation in the company as a whole and in the free interchange of information about one's work. Hand in hand with this goes the idea of personal participation in the decision-making process.

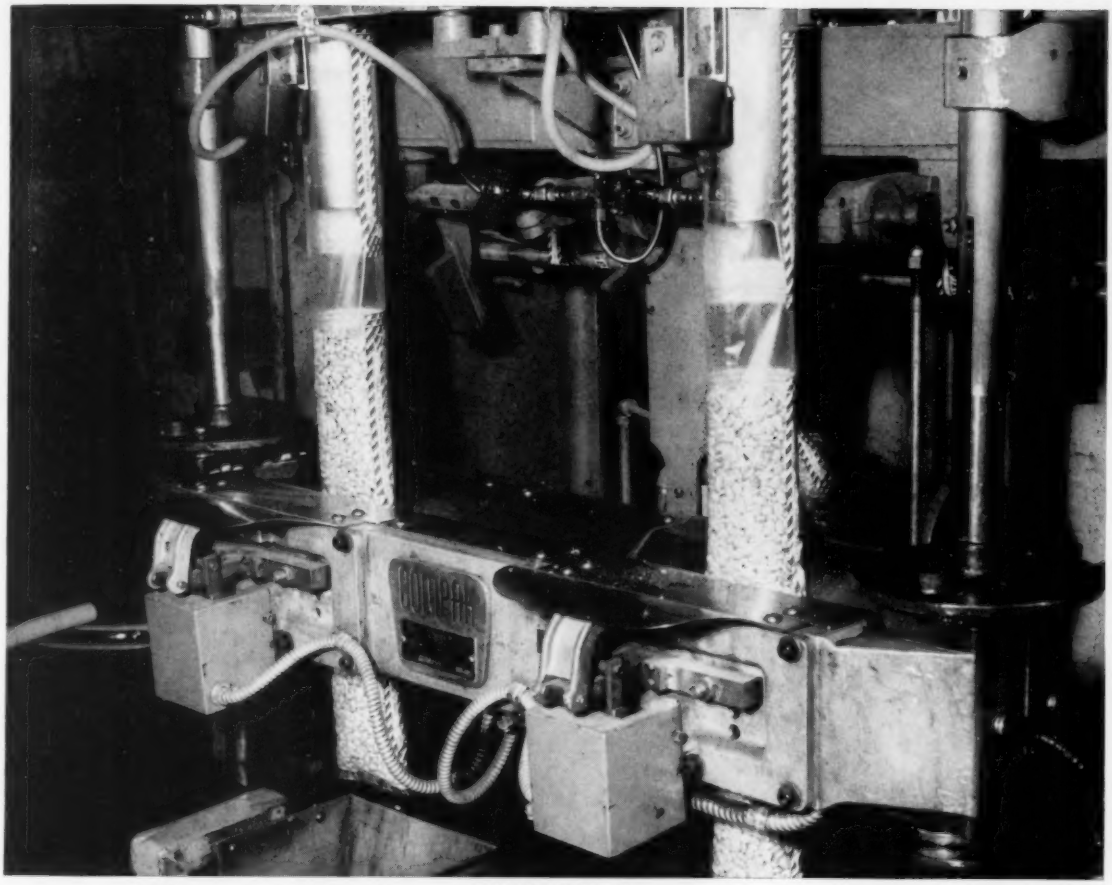
These high-sounding words are not limited to the front office. In fact, they are meaningless in the front office unless the fellows in charge of the packaging lines put them into practice in dealing with their own workers.

When a packaging line foreman gets his girls together to get their views on equipment placement, operating details, or techniques of package assembly, he is making a program effective in the area where it counts most. When a laboratory group leader makes certain his white-coated assistants (working on narrowly specialized phases of a project) understand how it all relates to the package development process, he is giving significance to their work.

The big point is that you have to think about a personnel program in terms of the wants and needs of the individual. The plant manager whose lines are humming and whose workers function with enthusiasm (more production, less breakage, less downtime) knows that this is so. And we have met a number of conscientious, forthright packaging line heads who don't even suspect that they have what amounts to a formal program and yet who are reaping the rewards of good management by remembering that the folks on the packaging line after all are human.

Bruce Hollingren

Editor



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"We get other advantages with VISQUEEN film. Less down-time—by far. Higher speeds. Uniform feeding through the machines. Film is delivered uniformly wound. It all adds up to greater economy when we package dried beans for grocery distribution.

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Vice President, The Farr Company

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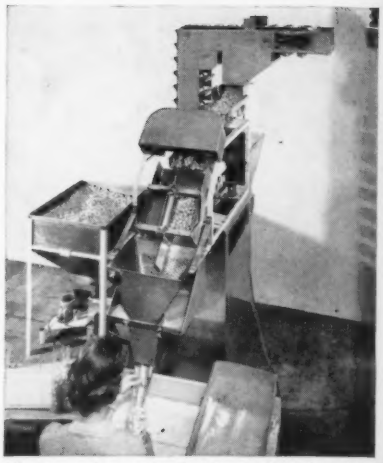
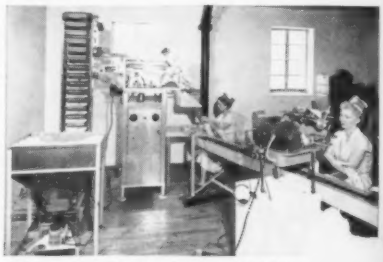


Close-up shows detail of Lynch Wey-Mor. Vibratory feeder brings product forward to the bulk (2 outside channels) and dribble (center channel) point. Machine is quickly adjusted for any amount from 8 to 16 ounces . . . automatically discharges when proper weight is reached.



Wayne's packaging team includes a Robo-Lift which is synchronized with Wey-Mor scale to assure a steady flow candy. One girl keeps hopper filled, one handles filled bags, one labels them and another cases the finished product.

Sweet and Gentle... The Story at Wayne Candies

Wayne Candies, Inc. Fort Wayne, Indiana, recently installed a Wey-Mor automatic weighing and bag-filling machine to provide gentle treatment to a wide variety of candies. The equipment is used to handle items Wayne manufactures as well as those it re-packages under its own label. Some of the items handled on the Wey-Mor include Flavored Puffs, Cinnamon Imperials, Rum & Butter Toffee, Pineapple Slices, Rainbow Mints and a wide variety of other items.

Since installing the equipment, Wayne Candies has increased its production enough to save 10% on bagging costs and has reduced material losses by approximately 50%.

Extremely smooth, fast delivery is particularly important to assure perfect package appearance of a fragile candy like Wayne's Flavored Puffs. Wey-Mor meets all requirements because it features a vibratory feed along its entire length, not just at the bulk and dribble point. This eliminates friction and breakage of the candy.

Wey-Mor will be a "sweet" addition to your packaging operation! See how it can improve your product's appearance and cut your production costs. Write for full information.

These are among the items Wayne Candies, Inc. packages with their Wey-Mor Automatic Weighing Machine: Flavored Puffs, Cinnamon Imperials, Rum & Butter Toffee, Pineapple Slices and Rainbow Mints are among the hundreds of varied items bagged on this high speed machine.

Write for Illustrated Wey-Mor Folder that demonstrates true flexibility in production-line weighing.

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